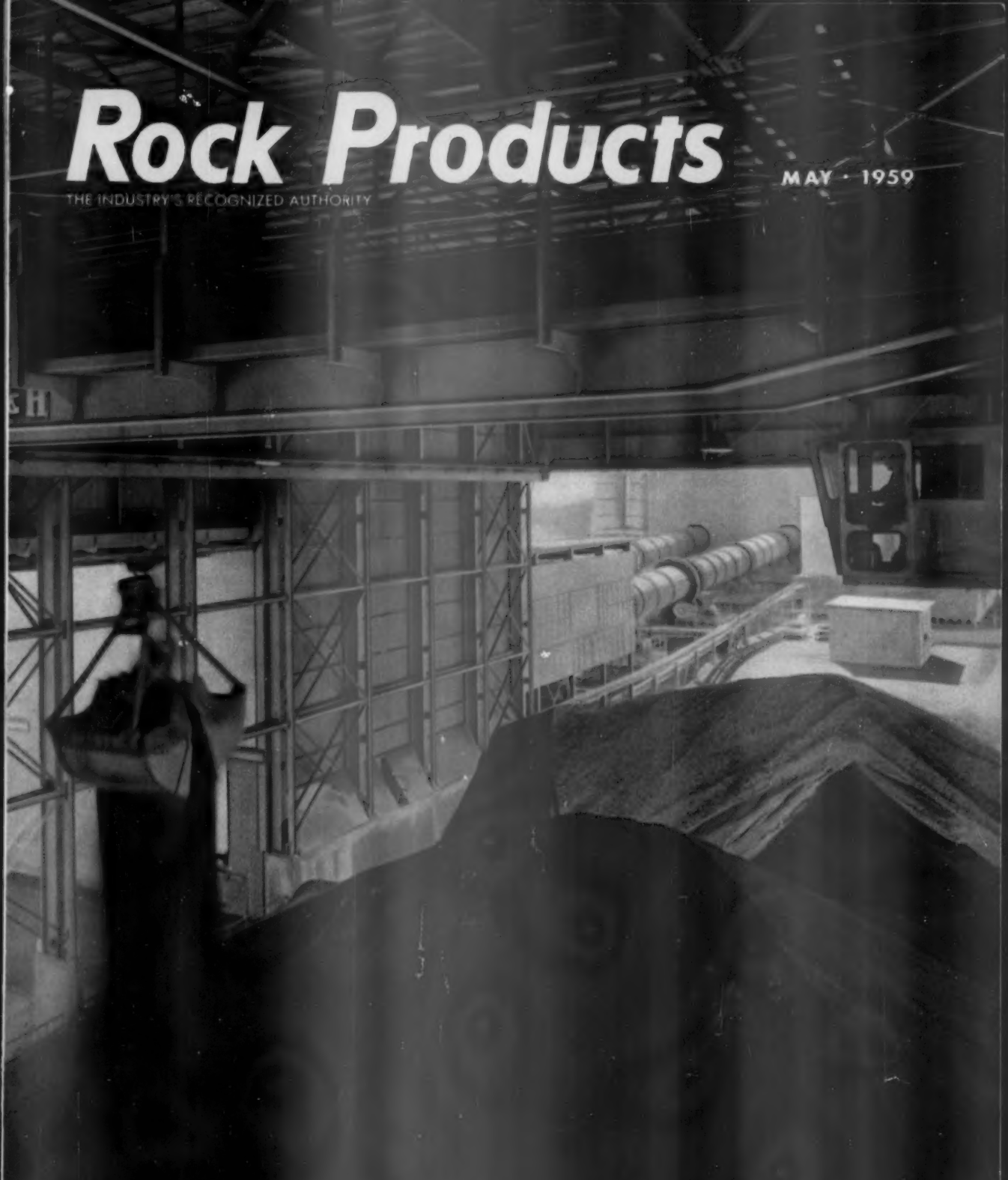
Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

MAY · 1959

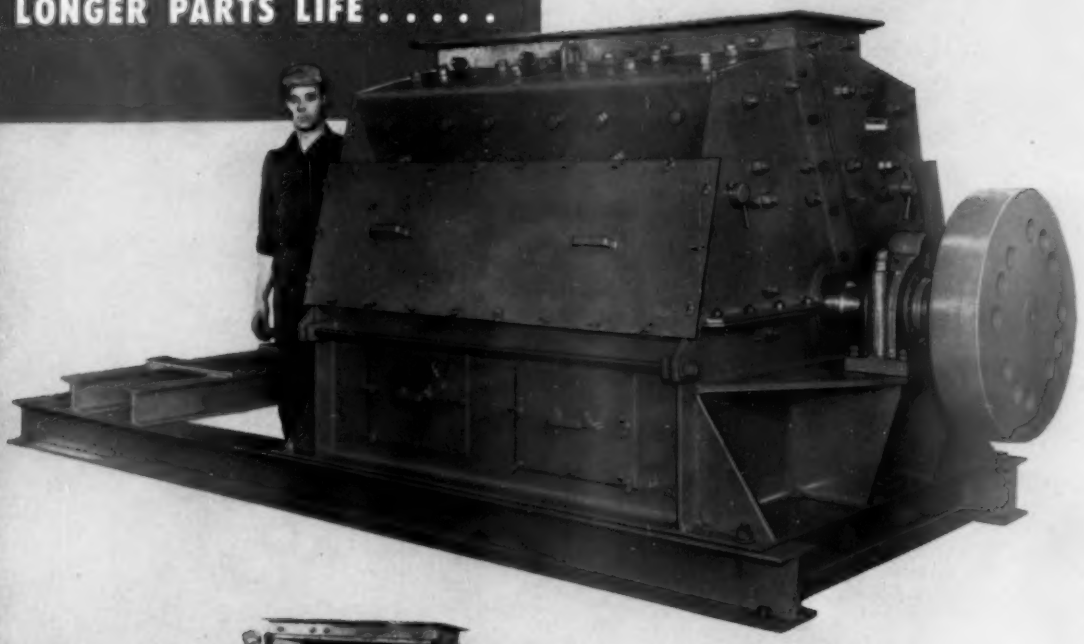


Annual cement issue

see contents... page 2

NEW DUAL "2-POINT" ADJUSTMENT INSURES MORE UNIFORM GRINDING, LONGER PARTS LIFE . . . . .

WILLIAMS *Reversible* HAMMER MILLS



Williams Reversible Hammer Mill with cover open.
Note these features:

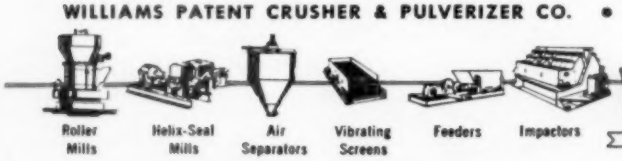
- Super-strong reinforced steel plate frame
- Renewable wear-resistant manganese steel liners
- Heavy duty oversize forged steel rotor shaft
- Anti-friction self-aligning roller bearings in dust-tight housings
- Complete accessibility to interior for quick parts changing

It's another Williams "first"—features not available in other hammer mills—that now makes it possible to maintain the original close clearances of *both* grinding plates *AND* cage sections against the rotating hammers. This easy-to-make "2-point" adjustment, in the most critical grinding area inside the hammer mill, gives absolute assurance of consistently uniform product quality.

In addition to the advantages of the Dual "2-Point" Adjustment, a Williams Reversible Hammer Mill substantially lowers upkeep expense by cutting hammer cost. Hammers can be operated in one direction today and another tomorrow simply by installing a simple reversing switch on the driving motor. Manual reversing of hammers no longer necessary. Grate bars also last longer. The double set of reversible manganese breaker plates, which last twice as long as other types, give four times the service! Maintenance and downtime are cut 50% or more.

Get all the facts about the hammer mill with *ALL* the top features.

WILLIAMS PATENT CRUSHER & PULVERIZER CO. • 800 ST. LOUIS AVE. • ST. LOUIS 6, MO.



WILLIAMS
CRUSHERS GRINDERS SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World

Enter 1084 on Reader Card

Rocks make the rounds

on LINK-BELT belt conveyors

MAKING THE GRADE FROM TRUCK TO BARGE — 9 Link-Belt belt conveyors plus Link-Belt screening equipment perform all sizing and conveying operations at Blubber Bay. This is typical of many sand, gravel or stone operations where Link-Belt conveyors perform this overall function—process, store and reclaim the material . . . carry it to rail or dockside.

Conveyorization is key to modernization of this Blubber Bay (B. C.) lime rock plant

When Gypsum, Lime and Alabastine, Canada, Limited purchased the Blubber Bay property and plant of the Pacific Lime Company, they decided it was time for extensive improvements. Working with Swan, Wooster and Partners, consulting engineers, they called in Link-Belt to supply a system of belt conveyors that would carry rock through screening and stockpiling operations for maximum production.

More and more firms are relying on Link-Belt. Here's an experienced engineering organization that will follow through from start to finish—the designing, manufacturing, erecting of conveyor systems . . . large or small. And nowhere can you match Link-Belt's combination of application experience . . . complete line of quality components . . . expert coordination of related equipment.

Get all the facts from your Link-Belt representative. Link-Belt engineers will be glad to work with you and your consultants—help you get the finest in belt conveyors.

LINK-BELT

15,132

BELT CONVEYING EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

Enter 1001 on Reader Card

Rock Products

Vol. 62, No. 5

MAY 1959

FEATURES

Where is the cement industry headed? 81

The editors of Rock Products *present the results of an extensive survey conducted among cement industry officials*

Industry leaders aim to achieve cement uniformity 83
New automated devices to upgrade plant efficiency 85
Precast/structural uses afford growth potential 86
Must educate users in placing of quality concrete 88
Cement industry expects more mergers 89
Increased automation changes pattern of labor 90
Opinions differ on professional manager trend 91
Labor is the big problem 92

The know-how of cement plant operation 93

Case history studies of 8 new cement plants include a summary of the equipment and operational data on a comparative basis

Remote lime plant proves progressive ● *by R. E. Lowther* 120

Far from "primitive," The Northern Lime Co.'s new plant in South Africa yields 30,000 tons of quality lime per month

Russia gets world's largest cement kilns 128

The two 19 x 575-ft. kilns of the giant cement plant now under construction in Siberia will be fed a limestone/nepheline mix

HMS for sand pioneered at Glen Canyon ● *by Walter B. Lenhart* 134

Heavy media separation is being used for the first time at Glen Canyon Dam to process a sand fraction

Novel plant design pays off ● *by Kneeland A. Godfrey, Jr.* 144

Arcole Midwest boasts a money-saving piggyback recycle belt conveyor and newly designed rotating screens for fines separation

Motorized head pulleys prove profitable 152

Motorized head pulleys have found an ideal use on the belt conveyors of Terminal Construction Co.'s semi-portable plant

What about cement imports? 156

1958 marked a decline in cement imports to the United States

Sand recovery methods share AIME spotlight 158

Highlights of the American Institute of Mining, Metallurgical and Petroleum Engineers' annual meeting in San Francisco

DEPARTMENTS

Calendar	70	New Literature	172
Editor's Page	14	New Machinery	186
Hints and Helps	72	Patents	185
Industry News	30	People in the News	26
Labor Relations	22	Rocky's Notes	16
Manufacturers News	219	Washington Letter	19
What's Happening	9		

EDITORIAL

GEORGE C. LINDSAY, Editor
NATHAN C. ROCKWOOD, Editor Emeritus 1917-1959
RICHARD S. HUHTA, Managing Editor
JOSEPH N. BELL, Special Features Editor
WALTER B. LENHART, Western Editor
ELWOOD MESCHTER, Associate Editor
CHARLES R. KLUGE, Associate Editor
MILDRED K. SMITH, Associate Editor
MARGARET A. MARTIN, Assistant Editor
KNEELAND A. GODFREY, Jr., Editorial Assistant
GERALDINE WAGNER, Editorial Assistant
JOANNE M. GAMLIN, Editorial Assistant

Contributing Editors

VICTOR J. AZBE — **OLIVER S. NORTH**
PETER B. B. ANDREWS Consulting Economist — **EDGAR POE**

BUSINESS

P. D. ALLEN
GENERAL MANAGER

MARY A. WHALEN
Subscription Director

C. M. HANCOCK
Production Manager

CARL G. FINETTE
Art Director

JEAN KROM
Promotion

C. P. TEATS
Field Representative

DISTRICT SALES OFFICES

EASTERN AREA—Reginald W. Davis, Associate General Manager, New York City
NEW YORK CITY—Nicholas G. Hock, District Manager, 341 Madison Ave., New York 17, N.Y., Tel. Oregon 9-8266.

CLEVELAND AREA—Harold R. Dunlop, District Manager Richard H. Rogers, Representative; 316 Center Building, 20475 Farnsleigh Road, Shaker Heights 22, Ohio, Tel. Skyline 1-8886.

WESTERN AREA—George K. Konz, Associate General Manager, Chicago, Ill.
CHICAGO—Charles L. Lemperly, District Manager 79 W. Monroe St., Chicago 3, Ill., Tel. Randolph 6-2802.

SOUTHWESTERN AREA—Richard E. Haierman, Representative; 9006 Capri Drive, Dallas 18, Texas, Tel. Davis 7-3630.

PACIFIC AREA—Duncan Scott & Company
SAN FRANCISCO—85 Post Street, 5th floor, San Francisco 4, Calif., Tel. Garfield 1-7950.
LOS ANGELES—1901 W. 8th St., Los Angeles 57, Calif., Tel. Dunkirk 8-4151.

FOREIGN—England—James H. Bedford, Managing Director, Maclean-Hunter Ltd., Wellington House, 125 Strand, London, W.C. 2.
Germany—Georg J. Linder, Wittelsbacher, Allee 60, Frankfurt Am. Main.

ROCK PRODUCTS is published monthly by MACLEAN-HUNTER Publishing Corporation, 79 W. Monroe St., Chicago 3, Illinois: P. D. Allen, President; Copyright, 1959, by Maclean-Hunter Publishing Corporation. Second-class postage paid at Chicago, Ill. and at Long Prairie, Minn.

SUBSCRIPTION INFORMATION
Subscription Price: United States and Possessions, Canada one year, $3.00; two years, $4.00; three years, $5.00. U.S. single copies, fifty cents. Pan American, one year, $8.00; two years, $14.00; three years, $20.00. All other foreign one year, $12.00; two years, $22.00; three years, $30.00. One dollar for single copies. Canadian subscriptions and remittance may be sent in Canadian funds to ROCK PRODUCTS P.O. Box 100, Terminal "A," Toronto, Canada.

To Subscribers—Date on wrapper indicates issue with which your subscription expires . . . In writing to have address changed, give old as well as new address. ROCK PRODUCTS is indexed regularly by Engineering Index, Inc. and the Industrial Arts Index.

B.F.Goodrich

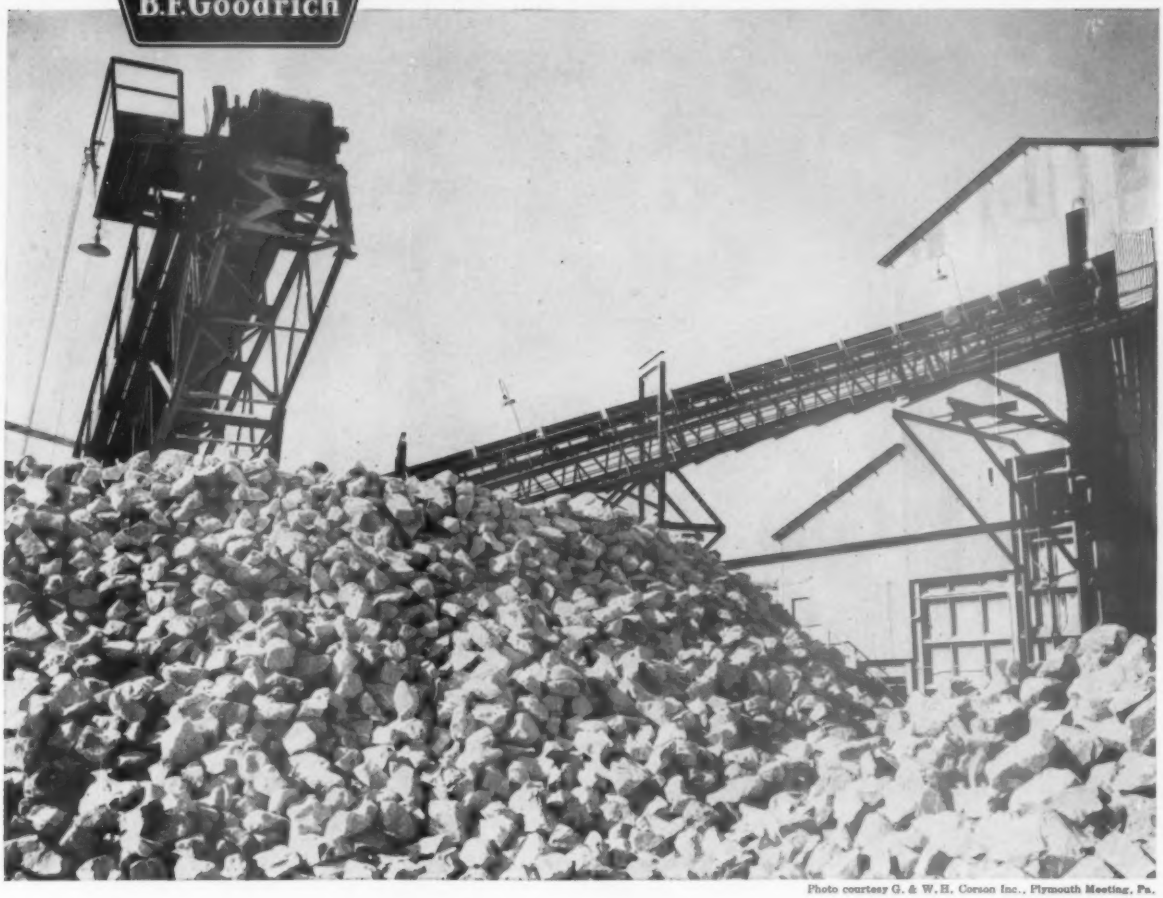


Photo courtesy G. & W. H. Corson Inc., Plymouth Meeting, Pa.

Hurrying upstairs with a mountain of rocks

B.F.Goodrich improvements in rubber brought extra savings

THOSE rocks are on their way to the top of that building. But getting them way up there was once a problem. The angle is too steep for a regular, smooth-surfaced conveyor belt. The rocks would have tumbled back down faster than the moving belt could carry them up. It looked for a time like the incline angle would have to be reduced; a longer, more expensive conveyor used.

But after discussing it with a B.F.Goodrich distributor, plant engineers decided to try a special kind of conveyor belt developed by B.F.Goodrich This "Riffle Grip" belt, as it is called, is made with a series of extra-tough rubber ridges molded into the cover. The tread that these ridges form holds the rock in place.

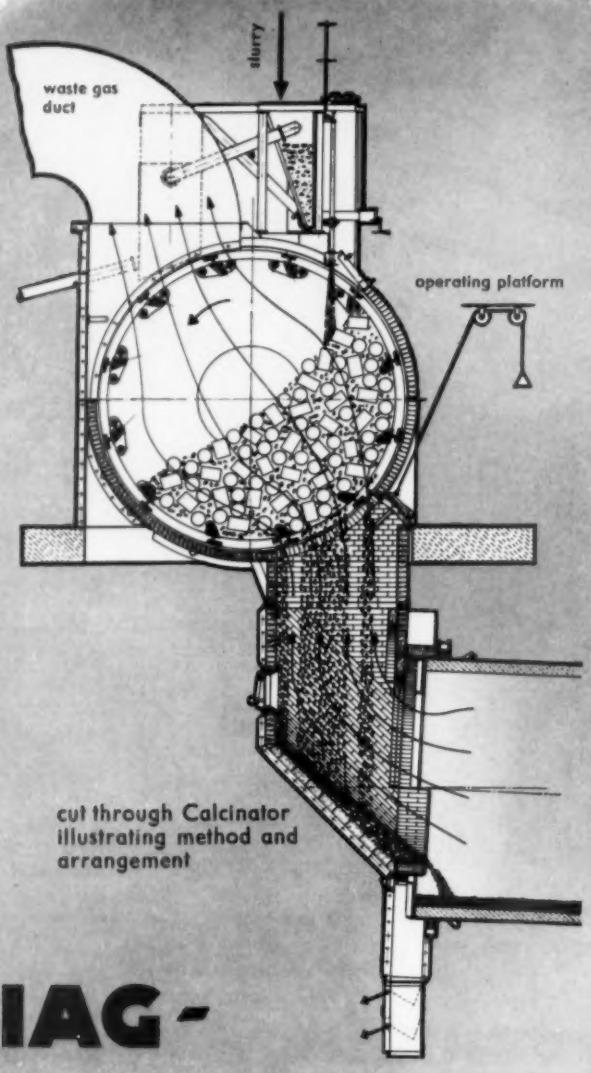
This B.F.Goodrich belt was tried, and it works perfectly. It takes some 500 tons of rock an hour on the long, steep ride up to the crusher. There's been no slipping, no sliding, no problems of any kind.

The belt is equally useful for carrying wet materials up steep inclines. In many cases, it's used to drain off water from the load being carried. But by changing the angle of incline and troughing idlers, this same belt can carry such sloppy materials as wet concrete and keep the water from draining away.

Your B.F.Goodrich distributor has the exact specifications for the B.F.Goodrich conveyor belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about *all* the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Company, Dept. M-555, Akron 18, Ohio.*

B.F.Goodrich *industrial rubber products*

Enter 1002 on Reader Card



cut through Calcinator illustrating method and arrangement

Calcinator Installation for 7200 bbl/day

Calcinator for a wet process 3600 bbl kiln pre-assembled in factory

MIAG-CALCINATOR

the pre-heater for wet process kilns reduces fuel consumption, increases capacity

Grate drum of Calcinator for 3600 bbl capacity being assembled

MIAG
BRAUNSCHWEIG (Western Germany)

Representatives

for U.S.A.
MIAG NORTHAMERICA INC.
1616 SOUTH 8TH STREET
MINNEAPOLIS 4, MINN

for Canada
THE TRIMONT CORP., LTD.
P. O. BOX 25, STATION H
MONTREAL, P. Q.

Enter 1003 on Reader Card

Enter 1004 on Reader Card

HEADED FOR HARD ROCK!

Here are two big Northwest 80-Ds headed for tough digging in Topeka, Kas. They are two of the four Northwest 80-Ds that Perry Jones of Carbondale, Kas. keeps steadily on the move in quarry work. One of these big Rock Shovels is shown feeding a Cedarapids Crusher.

Your Northwest is a *Real* Rock Shovel and when you have a real Rock Shovel you are equipped for any kind of digging. The qualities that make Northwest outstanding in rock work are easy to check. Booms, rugged and powerful, sticks of heavy section, the Northwest Dual Independent Crowd—a crowd that gives you crowding force most independent crowd shovels waste. This simple crowding force makes it possible to handle harder digging and more yards per day—per week—per month.

Other advantages—the Cushion Clutch eliminates shock overloads before they reach operating machinery—the Feather-Touch Clutch Control assures ease of operation and gives the true feel of the load free from the complications of compressors, pumps and other delicate mechanisms—Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and make spotting the big ones easier—these are just a few of the many advantages that assure performance in any digging.

Ask a Northwest man to tell you about the advances in design on the new Northwests.

NORTHWEST ENGINEERING COMPANY
1514 Field Bldg., 135 South LaSalle Street, Chicago 3, Ill.

4
NORTHWESTS for PERRY JONES
Carbondale, Kas.

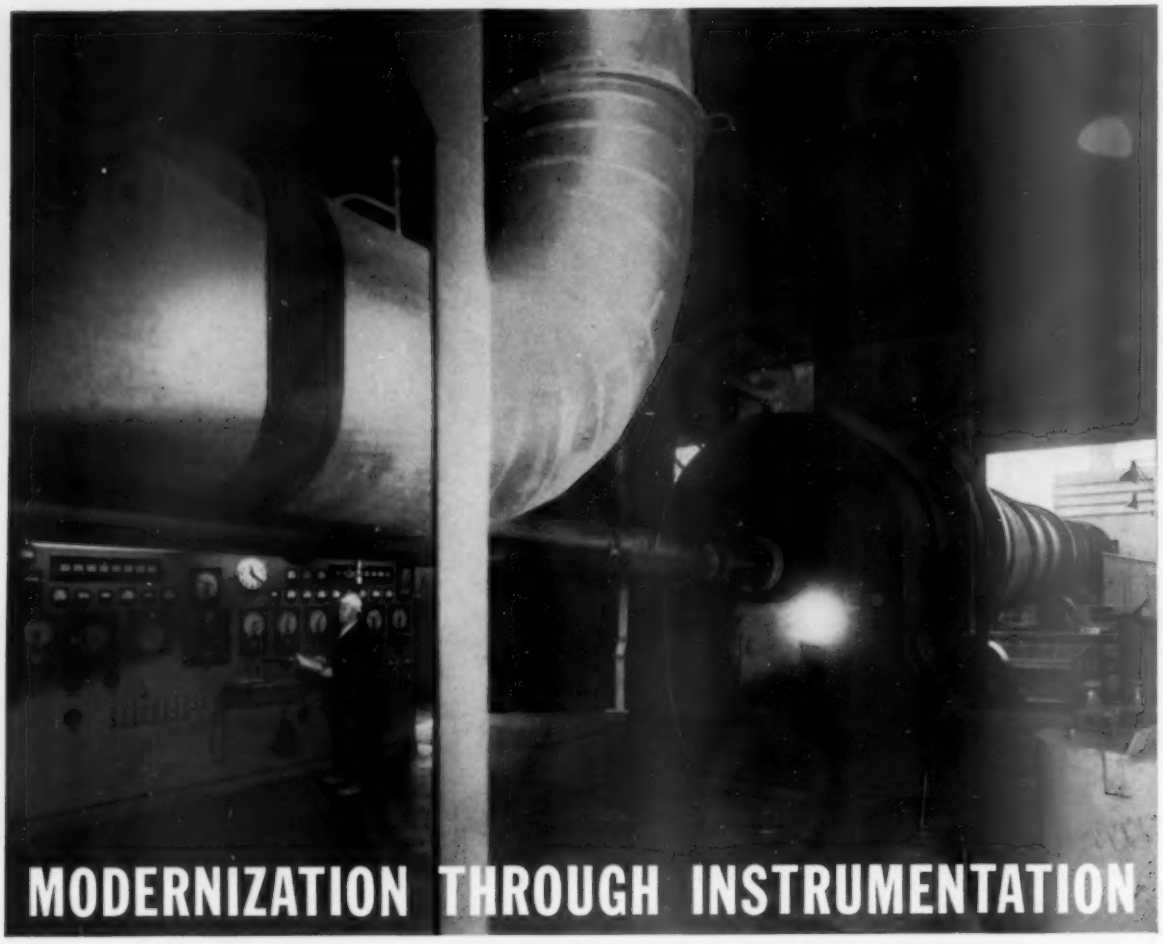
S-80-80-S

NORTHWEST

Always Ready to GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton to 35-Ton Capacity



Key to growth and profit for Marquette Cement

With capacity at new peaks, Marquette Cement is turning to modernization programs to help maintain the profit margin in these days of rising costs and increasing competition.

And at Marquette, engineer, controller and production man alike recognize the advantages of modern instrumentation and automation to help achieve their goals.

For instance, at their Nashville, Tennessee plant, low-cost high-quality clinker is being produced with the help of new instrumentation by Leeds & Northrup, the *most experienced* supplier of instruments and controls to the industry.

Using economical Speedomax® Type H recorder-controllers as basic measuring and control instruments, this new system, constructed by Allis-Chalmers, provides for automatic control of the 5 most important kiln conditions and continuous recording of 4 additional critical variables.

Like Marquette, other major producers are taking long hard looks at the future . . . examining processes for savings through instrumentation.

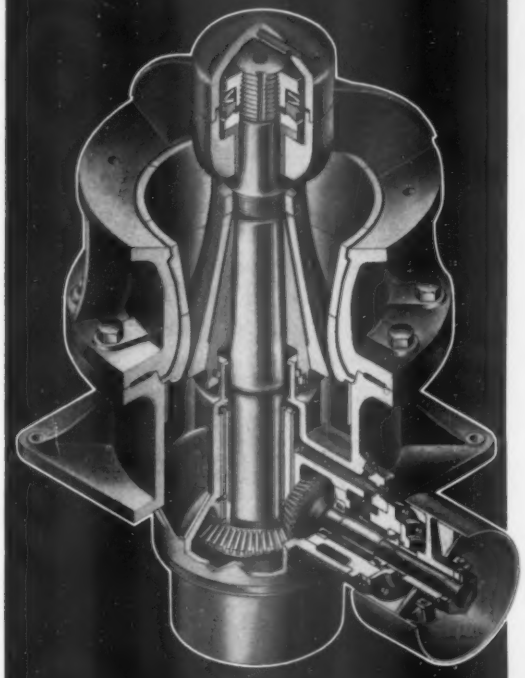
And they're finding that instrumentation *can* help widen the profit margin . . . not only in the kiln department but throughout the plant . . . in raw material handling, blending and grinding.

Your Leeds & Northrup engineer can show you now how proven L&N systems have helped others toward growth and profit. Call him at your nearby L&N office, or write to 4975 Stenton Avenue, Phila. 44, Pa., for diagrams and data sheets.

LEEDS & NORTHRUP
Instruments — Automatic Controls • Furnaces

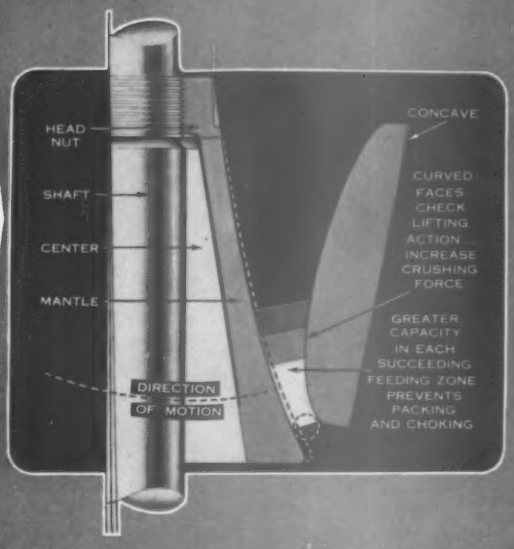
Enter 1005 on Reader Card

type TY GYRATORY CRUSHER



Traylor-made for uniform secondary reduction

Traylor TY Reduction Crushers require minimum floor space and little head room, with features that combine high production, economy of operation and lower maintenance costs.



Traylor's curved concaves used in the TY Crusher enable operators to secure large tonnages of small product of uniform size with low percentage of oversize and waste fines. Traylor TY Reduction Crushers are built in six sizes from 1'-3" to 5'-6" and with feed openings from 3" to 22". Write for bulletin #8112 today!

Traylor

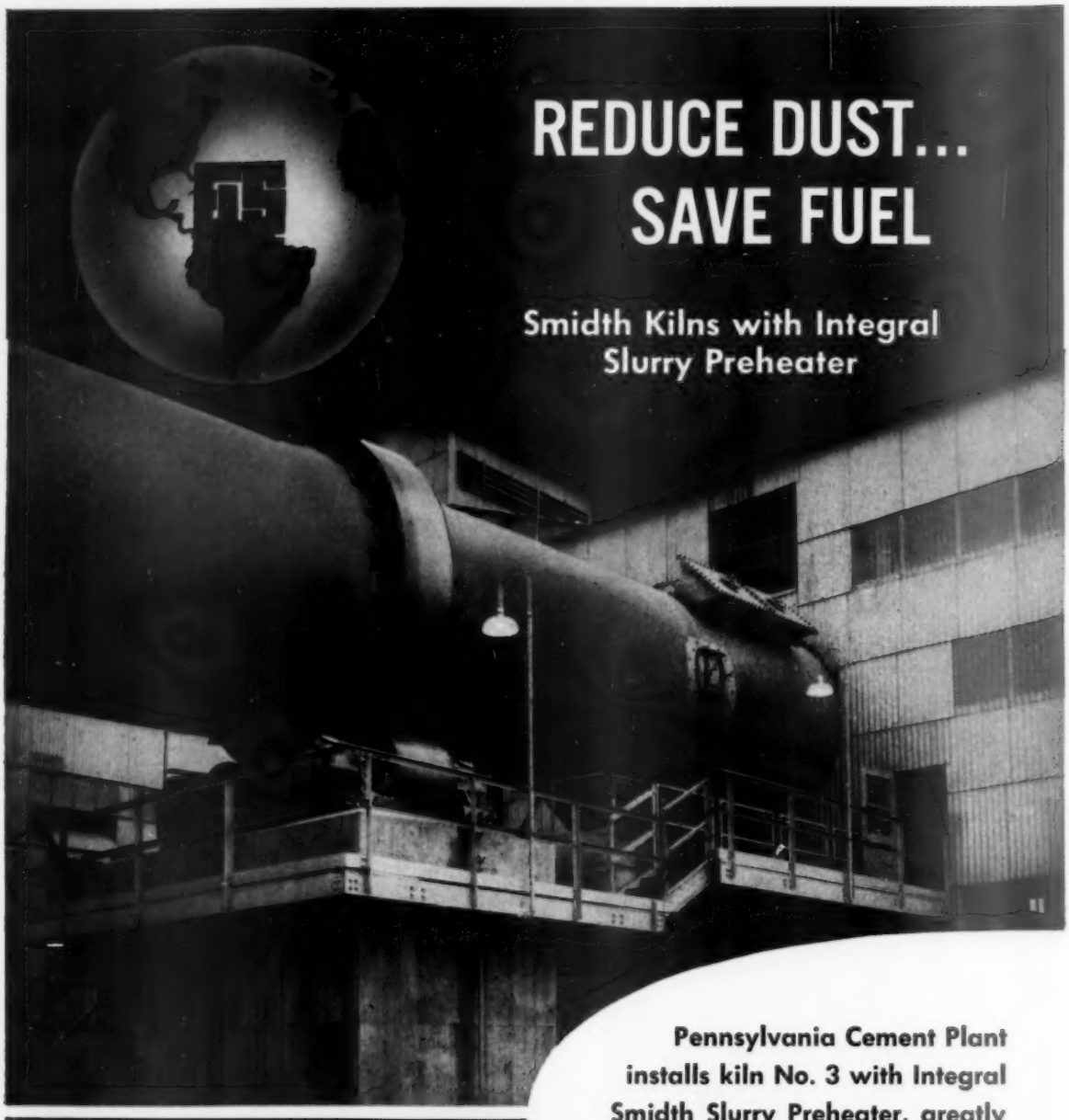
ENGINEERING & MFG. CO.

1154 MILL ST., ALLENTOWN, PA.

Sales Offices: New York — Chicago — San Francisco

Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P.Q.

Enter 1125 on Reader Card



REDUCE DUST... SAVE FUEL

Smidth Kilns with Integral Slurry Preheater

Pennsylvania Cement Plant installs kiln No. 3 with Integral Smidth Slurry Preheater, greatly reducing dust loss and fuel consumption.

Smidth

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

F. L. Smidth & Co.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India

Enter 1006 on Reader Card

What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

May, 1959

New blasting techniques have been developed by the Mining Institute of the USSR Academy of Sciences, reports the British publication, **Mine and Quarry Engineering.** The method is known as "electro-hydraulic" blasting, a shock wave generated by an electric discharge which disintegrates rock or other dense solids. Practical application of the technique is predicted to do blasting in areas where conventional explosives are not permitted, to drill blast holes in granite and hard ores, and to do fine grinding of ores and limestone. The Russians are developing designs for industrial applications. At the same time in this country, Allis-Chalmers researchers are delving into brittle fracture and high velocity shock waves. They have designed a laboratory model of a crushing machine that conditions particles to break in tension rather than by compression as conventional crushers now do. Electrical discharge systems to generate shock waves are also under study.

Great Britain's superhighway program received a temporary setback when the eight-mile Preston Motorway was closed to traffic after about eight weeks of use. Failure of about 3,000 sq. yd. of asphalt paving was attributed to inadequate drainage of the right-of-way which allowed water to penetrate deep fills. Subzero weather in England followed by a rapid thaw produced rapid disintegration of the road surface.

Transistors for industrial engines will be available soon if the plans of Electric Auto-Lite Co. mature. This firm has developed a package ignition system for use with conventional engines which will handle large electric currents with relatively tiny transistorized control circuits.

Tomorrow's highways may be made from materials in place on the right-of-way. This is the prediction of Dr. Ronald Scott, civil engineer at California Institute of Technology. Raw earth would be mixed with chemicals which are now considered waste products to make a hard, dense, durable concrete-like highway. While the techniques are still to be developed, great promise has already been demonstrated by salts, quicklime, spent sulphite liquors, and the residues from phosphate plants and alumina processors to stabilize or harden soils. Further research is expected to open up a whole new field of engineering construction.

Silica has been discovered to be an effective insecticide. The catch is that it must be a particularly fine powder. Silica "smoke" has a particle size less than 20 microns and is highly reactive. Its effectiveness as an insecticide is apparently due to an affinity for water. This may account for the fact that the silica promptly dehydrates every species of insect tested. If this is true, insects will probably never be able to develop a degree of tolerance which has limited the effectiveness of many other promising insect killers.

WHAT'S HAPPENING

New welding techniques are possible with a self-fluxing torch developed in the research laboratories at Allis-Chalmers. Hydrogen with nitrogen trifluoride provide the fuel to successfully weld nickel, stellite, and copper to constantan. Other unusual combinations can be successfully brazed with the newly discovered method: brass on tungsten, nickel on graphite and copper on stainless steel.

A new surface treatment of concrete products has been developed in the Netherlands. Block, pipe or other shapes are exposed to silicon tetrafluoride. This gas reacts chemically with the surface to develop greater density, improved compressive strength, impermeability and lower chemical reactivity. Greatest use in Europe to date had been to treat concrete floor tile and concrete pipe. The developers, Ocreitfabriek, NV, anticipate that its most advantageous United States markets are in processing concrete sewage pipe and in widening the application of concrete products in chemical plants.

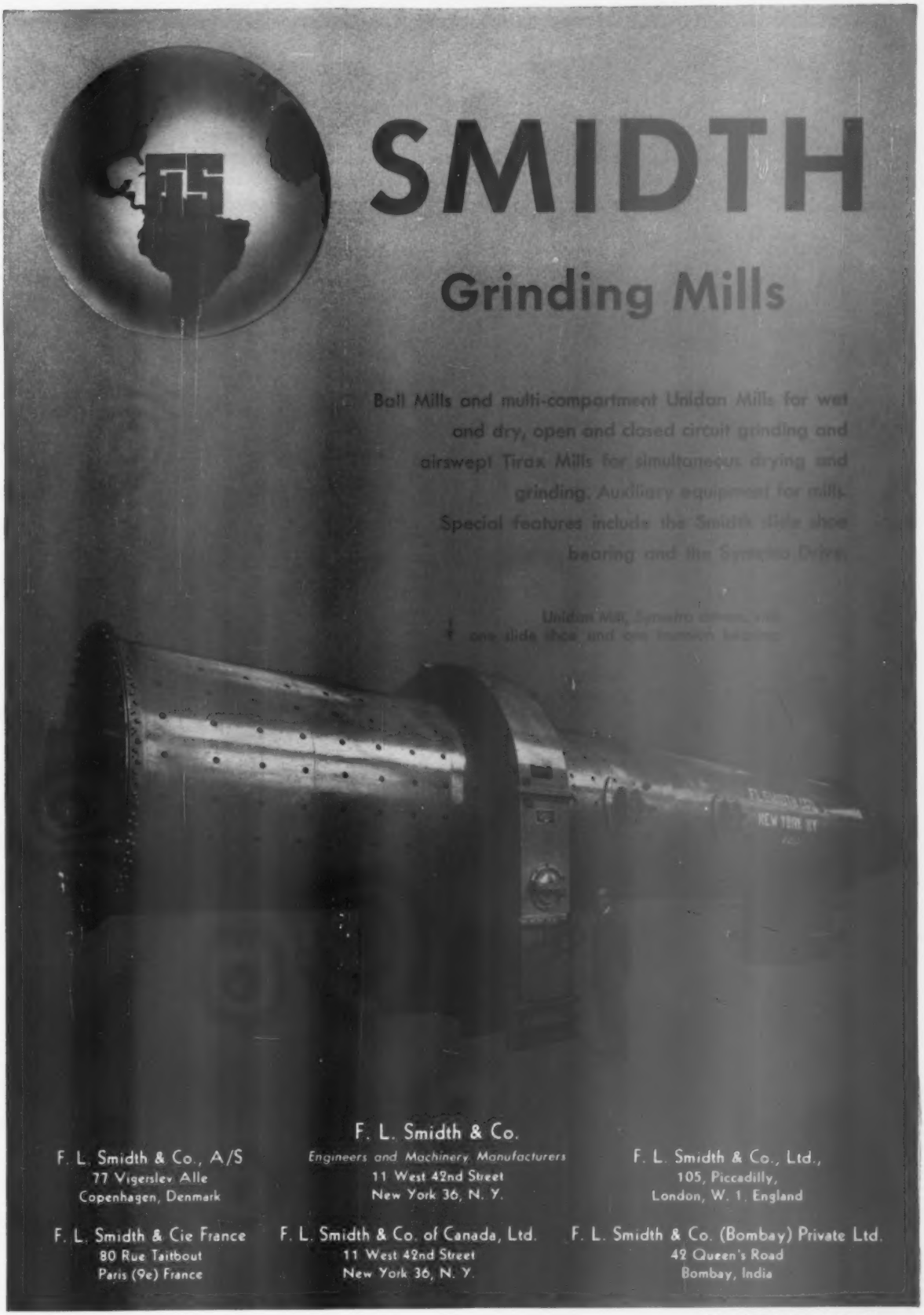
Explosives will be used to form metals and to perform many other tasks now considered difficult or impossible with today's conventional heavy fabricating equipment. Already carefully controlled blasts of small amounts of explosives are forging steel pressure vessel parts, forming single sheets of aluminum into finished shapes, piercing huge castings and welding dissimilar metals together. The development of the new process has set off a score of research projects aimed at solving their sponsor's particular forming, forging or welding problem. It usually takes a number of experimental blasts to determine the right amount of explosive and the right place to apply it before the process is used on production material.

Cigarette smokers may look forward to more effective filtration of smoke if a pending patent proves to be practical. Sized, fine crude vermiculite will be intimately mixed with tobacco before it is made into cigarettes. When the cigarettes are smoked, the minute particles of vermiculite exfoliate, open up, and adsorb the fume, liquids and solids which are considered to be objectionable. The vermiculite is said to be particularly effective in removing dust, nicotine and tars, and each flick of the ash drops off the spent particles bearing these waste products. Other patents cover the use of exfoliated vermiculite in the filter tip of cigarettes.

One way of calming troubled waters has been installed in the English harbor of Dover. A compressed air system generates huge bubbles which break up wave formations up to 10 ft. to permit the passage of ships into the harbor without difficulty. The new system replaces previous efforts to control the heavy waves at the entrance to the harbor, which involved compressed air pumped continuously through perforated pipe on the harbor floor.

Mineral discoveries in Puerto Rico may help this island commonwealth become self-sufficient. Commercial deposits of quartz, kaolin, alunite and other nonmetallic minerals have been located in Cerro La Tiza, south of San Juan. Since the island has few natural resources, these discoveries will be an important part of its industrial development program.

The editors


SMIDTH
Grinding Mills
Ball Mills and multi-compartment Unidan Mills for wet and dry, open and closed circuit grinding and airswept Tirax Mills for simultaneous drying and grinding. Auxiliary equipment for mills.
Special features include the Smidth slide shoe bearing and the

F. L. Smidth & Co.
Engineers and Machinery Manufacturers
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India

Enter 1007 on Reader Card

BIG·NEW...

Exclusive "Balanced-Design"

This new H-120 "PAYLOADER" tractor-shovel is the result of years of development by The Frank G. Hough Co., combining the experience and "know-how" of the pioneer and leader in this field. HOUGH "balanced-design" provides proper weight distribution; ample power for both drive and hydraulic operations and maximum reach and dumping heights consistent with the handling of bigger, heavier loads.

Safety and Stability Emphasized

The new boom arm design and positioning insures complete operator safety since all moving parts and pivot points are located forward of the operator's compartment. The stability of this new H-120 "PAYLOADER" is helped by the use of special high strength, light weight "T-1" alloy steel in the boom arms. Capacity loads can be carried close to the machine with a 40° bucket tipback at ground level and a flat 75° position at average carry height.

Ease of Operation

With power steering, power air brakes and power-shift transmission, this big tractor-shovel operates easier than many smaller units.

The operator compartment features a canopy, front and rear windshields and windshield wiper. The bucket-type seat is positioned to give unlimited visibility of the load at all stages of operation.

Sensible Service Accessibility

Easily removed panels expose electrical connections and batteries on one side — give access to hydraulic system controls and reservoir on the other. Daily or periodic checking and servicing points are easy to reach.

Two-Stage, Dry-Type Air Cleaner

An important engine protective feature of the new H-120 is the Donaldson "Donaclone" two-stage, cyclonic precleaner and filter air cleaner. It keeps out 99.8% of the dirt — maintains high efficiency regardless of engine speed, temperature changes or dust accumulation, requires 75% less service time.

Power and Efficiency

The H-120 is powered by a CUMMINS NRT-6BI turbo-charged diesel engine developing 300 H.P. at 2,100 rpm. It handles full load of both torque-converter and hydraulic pumps without "lugging down".

The power-shift transmission has four speed ranges in both directions including travel speed up to 28 mph. Exclusive dual brake controls give driver the choice of braking with or without transmission engaged.

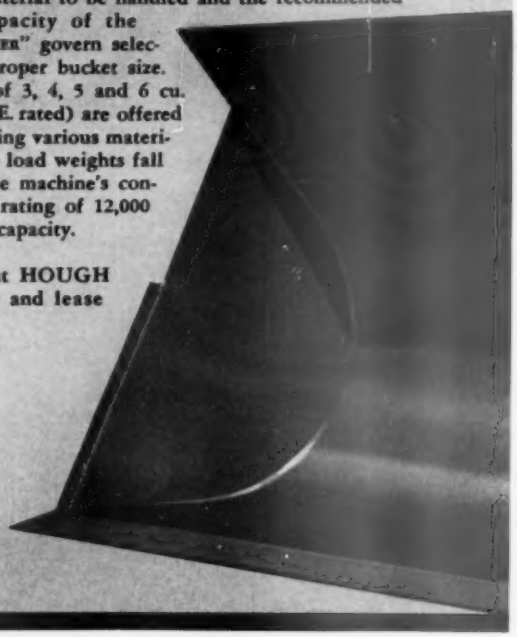
More Reach and Dumping Height

At maximum dumping height this new "PAYLOADER" has 14'6" clearance to the hinge pin and 10'10" clearance with the bucket dumped at 50° angle. In this position the reach from the front tires is 42".

Bucket and Carry Capacity

For continuous operation without abuse, the weight of the material to be handled and the recommended carry capacity of the "PAYLOADER" govern selection of proper bucket size. Buckets of 3, 4, 5 and 6 cu. yds. (S.A.E. rated) are offered for handling various materials where load weights fall within the machine's conservative rating of 12,000 lb. carry capacity.

Ask about HOUGH purchase and lease plans.



THE FRANK G. HOUGH CO. 5-8-1
705 Sunnyside Ave., Libertyville, Ill.
Send complete data on the big new model H-120.

Name
Title
Company
Street
City State

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

Enter 1008 on Reader Card

..MODEL H-120

12,000 lbs.
carry
capacity

PAYLOADER®

EDITOR'S PAGE

George C. Lindsay, Editor

Watch the cement industry go!

JET-LIKE PROGRESS IS A CERTAINTY for the cement industry of the future. Industry members are all fired up over new worlds to conquer in technical, management, sales and all other fields of industry endeavor. They're going after these goals with vigor, and they're already getting good results.

Beginning just a short time ago, management uncovered a new sense of curiosity that led to a desire for improvement of their businesses. Some of this desire was forced, but most of it came voluntarily. Anyhow, many manufacturers quickly became dissatisfied with what they had, good as it was. So they started to poke around to look for new and better ways to make high-quality cement at lower cost, and to merchandise it.

Now, they're real curious. They question the continued use of the longer and bigger cement kiln, to get more fuel efficiency. Some have gone to the use of external preheaters and economizers with much success. An eye is on other, new types of processes, too.

It's exciting to note in this connection that Russia apparently is going in the other direction. You'll find more detail on the "world's largest kiln," going into Siberia soon, in this issue.

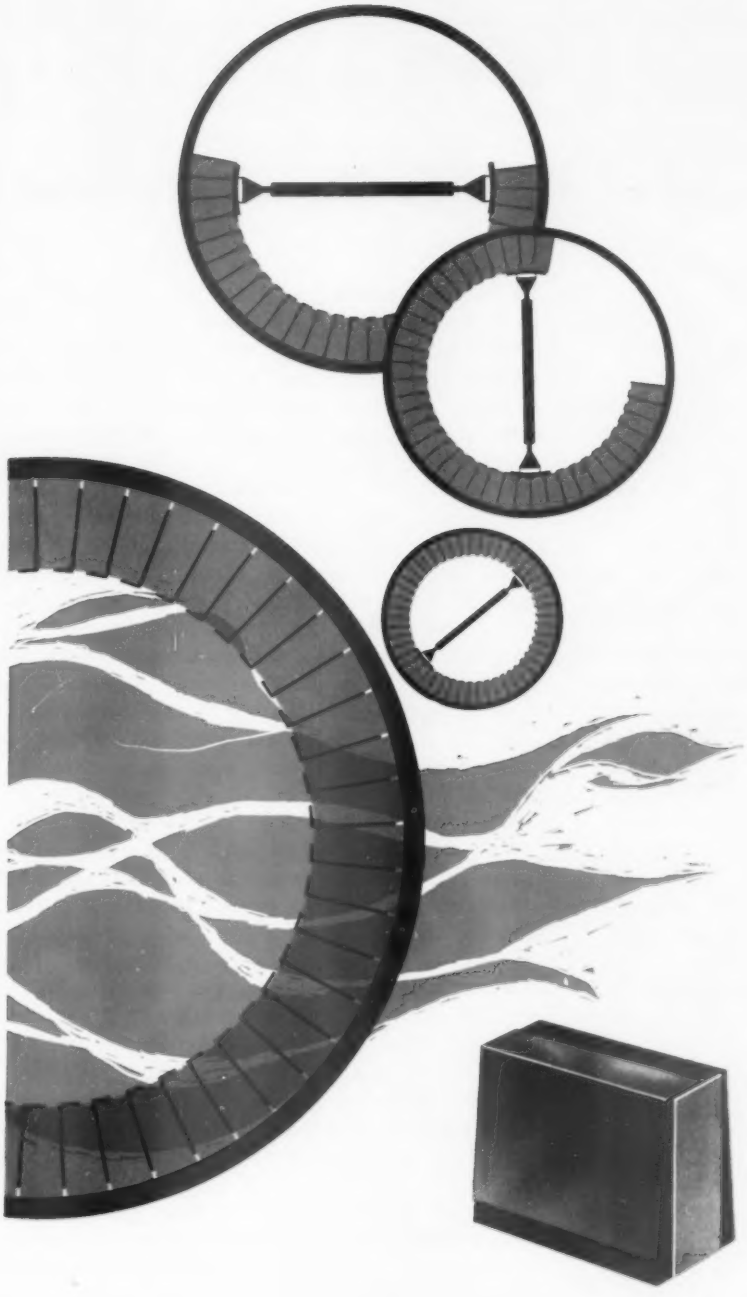
Automation throughout the entire cement-making process is on the increase. At least one company is using a digital computer. Most others are trying every conceivable control device they can get their hands on. More than ever before, maximum cement uniformity and quality are goals to be reached. But getting them economically is a most important requisite.

Then there's a new attitude toward marketing and merchandising. Many question that more than a mere approach to new and exciting uses of concrete has been made. This field, they think, is wide open, particularly with future use of concrete in structures. Some insist that salesmen need a new sales philosophy.

True, there are many road blocks in the form of problems that rise up to restrict full acceleration of progress the industry wants. The one, big, tough problem is labor. It isn't new, nor is it peculiar to the cement industry. You can be sure, though, that this and other problems are getting the study they need for proper solution.

These facts about the "new" cement industry were given to us freely by top management officials of the industry. That they did report to us so completely in itself substantiates the new trend in industry thinking. We're proud to report the consensus back to you in this issue, in a special section beginning on page 81.

We're enthusiastic about the prospects of watching the industry make the progress it's determined to get.



$1600 SAVING IN KILN TIME ALONE . . . WITH INSTALLATION OF KAISER UNITAB* KILN LINERS!

". . . installed 30 feet of Unitab Liners in 15 hours—as compared to 23 hours for (competitive) brick—thanks to ease of shimming and true dimensional brick . . ." reports a leading western cement producer.

With kiln production time valued at $200 an hour, eight hours saved is $1600 saved!

Kaiser Unitab Kiln Liners are consistently giving operators savings like this . . . plus greatly improved hot zone service. There are two big reasons why:

1. The basic brick used in Kaiser Unitab Kiln Liners is Kaiser Periclase Chrome Basic Brick. This brick is especially designed—and proved in years of kiln service—to be dimensionally stable, and to give high resistance to spalling and to chemical attack by hot clinker.

2. Bonded shims and spacers, a development pioneered by Kaiser Chemicals†, assure correct liner placement and speed installation as much as 50%. The cardboard spacers automatically provide for longitudinal expansion, and the shim bonding adhesive automatically provides for circumferential expansion.

In addition, the overlapping shim melts during production start-up and welds clinker particles to the hot face. This quickly produces a tenacious coating that resists spalling even through repeated shutdowns. Think of what this means in greater production and reduced down-time!

If you are not already using Kaiser Unitab Kiln Liners, let your Kaiser Chemicals Sales Engineer show you how they can help you reduce kiln down-time and get increased lining service. And ask to see the 30-minute color movie, "Progress In Modern Basic Refractories."

Call or write Kaiser Chemicals Division, Dept. C9522. Kaiser Aluminum & Chemical Sales, Inc., at any of the Regional Offices listed below:

PITTSBURGH 22, PA. . . . 3 Gateway Center
HAMMOND, IND. . . . 518 Calumet Building
OAKLAND 12, CALIF. . . . . 1924 Broadway

KAISER CHEMICALS

Pioneers in Modern Basic Refractories
Refractory Brick and Ramming Materials
Castables and Mortars • Magnesite
Periclase • Deadburned Dolomite

*A trademark of Kaiser Aluminum & Chemical Corporation. †U. S. Patent No. 2829877. Foreign Patents Applied For.

Enter 1009 on Reader Card

ROCKY'S NOTES

NATHAN C. ROCKWOOD

Materials sciences and engineering to be "married"

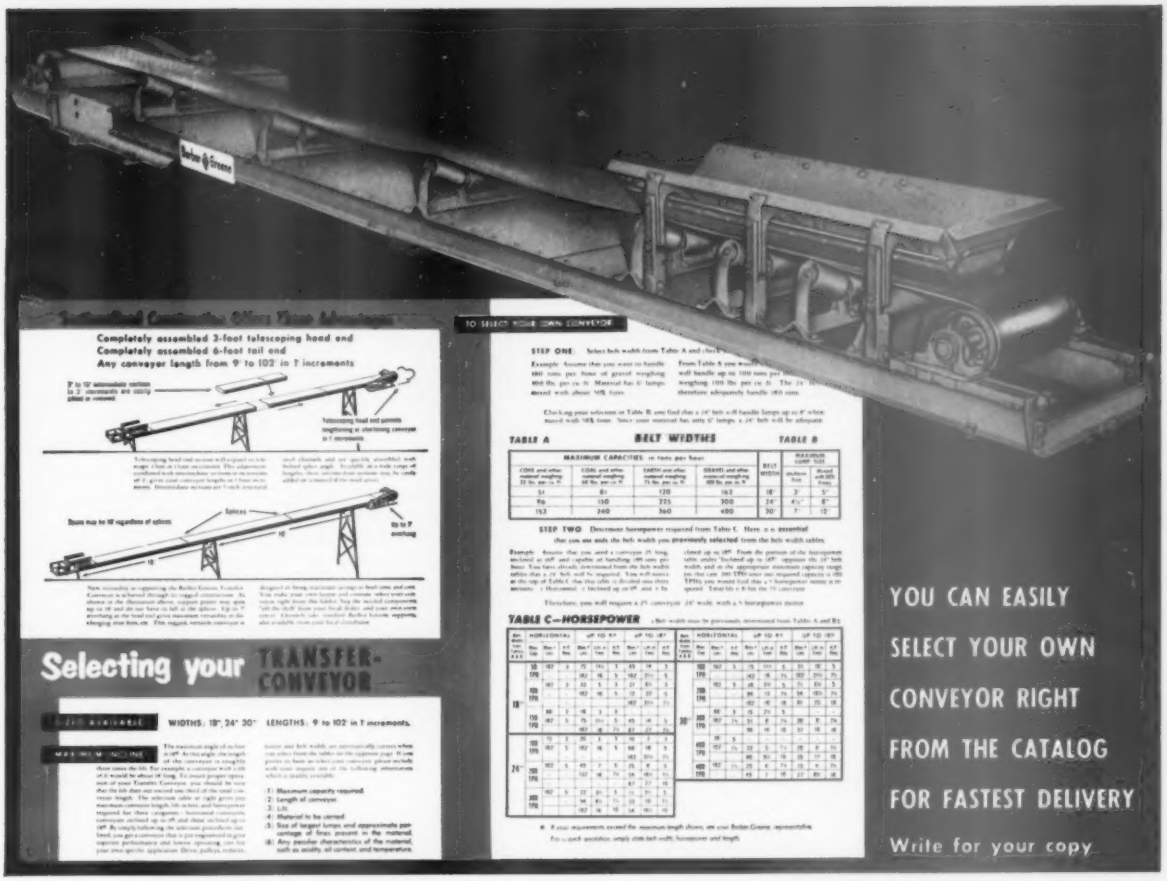
AN ANNOUNCEMENT of much latent interest to our readers was made in the February issue of the "ASTM Bulletin." The American Society for Testing Materials has established a new "Division of Materials Sciences." This does not appear on its face to be very exciting, but actually it may mark the beginning of an entirely new approach to the problems involved in the production or manufacture of rock products construction materials and their more intelligent use by the engineering profession. The new division will, of course, include all materials, but it may be especially significant in that two of the committee of four officers to be responsible for its organization are best known for their interest and research in portland cement and concrete. They are Prof. K. B. Woods, head of the School of Civil Engineering, Purdue University, president of ASTM, and Dr. A. Allen Bates, vice president and manager of research and development, Portland Cement Association, a vice president of ASTM.

Those of our readers who have more or less followed the current popular discussion, nationwide, of technical education in this country, know that many men in authority are worried about maintaining our supremacy in the scientific and engineering field. The consensus of opinion seems to be that we are not so likely to fail in research and development of new scientific discoveries as we are in finding adequate technical brains to apply these discoveries. We have become a nation of specialists in some one or a few branches of science and its application, without having developed individuals with enough broad, general knowledge of all the various related scientific developments to coordinate these new discoveries and developments into useful knowledge that the technical, or engineering, man can absorb and apply.

This is not a new subject of discussion with us here, because ever since we have found time to explore some of the recent developments in such sciences as structural and physical chemistry, geochemistry, colloidal chemistry, etc., we have been convinced that research and study of portland cement and concrete has been largely skirting around the nucleus of the problem, collecting merely empirical data, and largely, if not wholly, neglecting the basic or fundamental scientific facts in the kernel or nucleus, which account for all similar natural phenomena. We have felt certain that if researchers in cement and concrete had more thorough, or a better working knowledge of structural and colloidal chemistry, they would be closer to approaching the truths they are seeking, than the quite inadequate approach of looking upon cement and concrete as unities, in spite of a host of varying factors, all expected to be accounted for by a few simple explanations.

We have been researching a good many years, but as yet we do not know the nature of the bond which holds particles of cement together, or what attaches the cement to a piece of aggregate. To say that it is a calcium silicate bond, isn't half an answer. Is it the calcium (or lime) that is the key? Or is it the silicon (or silica)? What part does the water (H_2O) or the hydroxyl ion (OH) play? Is the bond formed in hardened cement anything other than the familiar (to structural chemists) hydrogen bond, which means that the connecting link between two hydrated particles of cement, or calcium silicate, or between the hydrated cement and a particle of aggregate, is merely a hydrogen ion? Is the bond between a particle of cement and a particle of wet aggregate a real chemical bond, or merely a physical one? If a chemical one, can the bond be the same with different mineral species of aggregate? Or is this bond influenced only by the physical character of the aggregate surface (smoothness, porosity, etc.)?

Please turn to page 170


Completely assembled 3-foot telescoping head end
Completely assembled 6-foot tail end
Any conveyor length from 9' to 102' in 1' increments
Selecting your TRANSFER-CONVEYOR
WIDTHS: 18", 24", 30" LENGTHS: 9' to 102' in 1' increments.
TABLE A
BELT WIDTHS
TABLE B
TABLE C—HORSEPOWER
YOU CAN EASILY
SELECT YOUR OWN
CONVEYOR RIGHT
FROM THE CATALOG
FOR FASTEST DELIVERY
Write for your copy

New, low-cost belt conveyor now available in lengths to 102′

If you handle bulk materials, you should have a copy of the new Barber-Greene Transfer-Conveyor Catalog. With it, you can readily select your own conveyor. Belt width and horsepower are automatically correct for your job.

The Barber-Greene Transfer-Conveyor has cut costs on so many jobs that its range has now been extended to 102′ in 1′ increments. Belt widths are 18″, 24″ and 30″.

Because the Transfer-Conveyor is pre-engineered and made up of standardized components, special engineering time and expense are eliminated, and shipment is from stock—usually from the local distributor's stock. Erection is merely a matter of bolting the major components together and positioning the conveyor. Sectionalized construction gives flexibility for lengthening or shortening to meet future requirements.

Other Transfer-Conveyor advantages include:

- Rigidly braced channel frame allows 7′ overhang at head end, 18′ spans between supports.
- Head and tail end sections shipped completely assembled, aligned and adjusted.
- Heavy-gauge steel decking protects return run of belt.
- Worm gear reducer, running in oil, cuts maintenance expense.
- Ball-bearing carriers assure long, trouble-free life.
- Heavy thread screws provide belt tension adjustment.
- Parts interchangeable and repair parts readily available.

58-20-PE

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

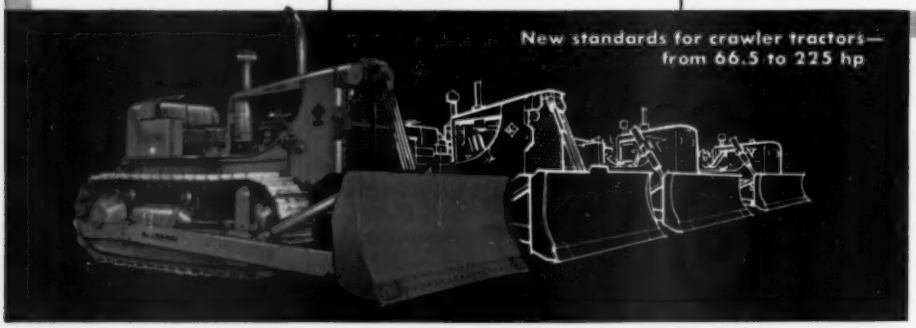
CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Enter 1015 on Reader Card

How to get more tractor for your dollar

In the chart below are five important crawler tractor advantages. These features have earned recognition by all makers of crawler tractors—one or more are now included in their latest designs. It stands to reason that the more of them you get on your next crawler, the more it is worth to you.

Advantage	What it means to you	Where you get it
All-steel main frames	Power train protection Better equipment mounting Better weight distribution	Allis-Chalmers is the only manufacturer offering main frames in *all* models. Two other manufacturers now offer them in one model.
Permanent lubrication of truck wheels, idlers and support rollers	No more wasted time greasing these track components	Allis-Chalmers is the only manufacturer offering permanent lubrication of truck wheels, idlers and support rollers on *all* models. One other manufacturer offers permanent lubrication on three models.
Torque converter drive	Matches power to load automatically Transmits power smoothly Less shifting	Allis-Chalmers pioneered it in crawler tractors in 1940 . . . offers it in two tractor shovel models, two tractor models. All other major manufacturers now offer it as optional equipment in one or more models.
Double reduction final drives	More clearance Longer gear life	Allis-Chalmers is the only manufacturer offering double reduction final drives on *all* models. One other manufacturer offers it on three models.
True unit construction	Faster service Easier access to all major assemblies	Allis-Chalmers is the only manufacturer offering true unit construction in *all* its models. Two other manufacturers now offer modified unit construction in part of their lines.



Here's proof that other manufacturers of crawler tractors have chosen to "follow the leader" with Allis-Chalmers engineering . . . and that your Allis-Chalmers dealer is the man to see for top value in crawler tractors.

He'll be glad to demonstrate the model of your choice. It will have more industry-approved advantages than any other unit near its size. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

...move ahead with ALLIS-CHALMERS...power for a growing world

Enter 1010 on Reader Card

Washington Letter

Edgar Poe

Highway Users tax Measures Pending House anti-diversion measures would authorize and direct that all Federal taxes on highway users be channeled into the Highway Trust Fund. A measure by Representative Michel, Republican of Illinois, would transfer to the Trust Fund from general revenues, about $1,500,000,000 a year. The Michel proposal, like some others, would be an alternative to the proposed Federal gasoline tax increase. The congressman maintains that gasoline, though no luxury, is being treated as such by taxing authorities.

Taxes allocated to the Federal Highway Trust Funds are: motor fuels 3 cents a gallon, tires 8 cents a pound, tubes 9 cents a pound, retread rubber 3 cents a pound, trucks and buses 5 percent, and truck use tax $1.50 per 1,000 pounds (under 13 tons exempt.) Federal motor taxes, not allocated to the Fund are: automobiles 10 percent, parts and accessories 8 percent, and trucks and buses 5 percent.

Pressure To prevent Price hike Washington is putting pressure on both labor and industry in an effort to prevent a steel strike, and to keep steel prices from going higher. Labor Secretary James Mitchell said: "The public is sitting at the bargain table this year and will oppose wage settlement which would result in inflationary price boosts."

Feather-Bedding The president of the Association of American Railroads, Daniel P. Loomis, advised Congress discontinuance of railway "featherbedding" would cut operating costs, streamline service, and make the railroads more competitive. Meantime, more than 500,000 railroad jobs have been lost since the end of World War II.

AEC planning Series of Tests The Atomic Energy Commission is seeking to rally private industry support in its peaceful development plans. The Commission has scheduled a series of "Project Plowshare" tests later this year in an effort to dramatize its potentials. Private industry generally has appeared skeptical. However, AEC believes that atomic blasts can perform huge earth and rock moving jobs. Perhaps the autumn tests out West will show the potential of earth and rock moving by nuclear blasting.

Southern Western Areas trend Officials in the Government express the belief that the industrial movement to the South, Southwest and Pacific Coast will continue for several years. The trend which began shortly before Pearl Harbor, has been continuing ever since. A good labor supply, a warmer climate, available raw materials and lower construction costs have been major contributing causes. The population growth in these areas is expected to be above the national average for the next decade.

Competitive Bidding Senator Williams, Republican of Delaware, is sponsoring a bill that would require all government construction to be done under competitive bidding. A substantial portion of it, particularly that involving the huge Department of Defense, is done by negotiation.

Five bills to Protect union Members Pending Sen. McClellan, who probably will have to pay politically for his hard-driving efforts against the corruption, comes up for reelection next year. The Senator, who believes that "fair and square" labor unions definitely have a place in the country, has five bills pending. They are designed, among other things, to protect the rights of rank and file members and

give them a voice in running their unions, and expenditure of their funds. Now many of them are discouraged and even threatened if they attend union meetings, Senator McClellan declares.

Meantime, the power of the Teamsters Union in this country under Jimmy Hoffa is both deplorable and alarming. Senator McClellan believes that at Hoffa's whim the economy of the United States could be tied in a knot almost overnight.

Retirement Measure The self-employment retirement bill may have been slowed down by Secretary of Treasury Robert B. Anderson. The Cabinet officer declares that passage of the measure would provide a special tax-deferment preference which wage earners do not have. The plan, which has strong backing in Congress, would allow self-employed people like small business men, tax deductions up to $2,500 a year. However, if passed it would cost the Treasury $365,000,000 annually.

Senator Exposes Mobsters The American people generally owe a debt of gratitude to hard-hitting Senator John L. McClellan, Democrat of Arkansas, for his intermittent but indefatigable efforts in exposing some vicious mobsters, crookedness, extortions and racketeers in some powerful labor unions, and in some management fields.

Now that the Senate Select Committee in improper activities of the labor or management field has come to the end, it is up to Congress to show statesmanship and pass legislation designed to reduce to a minimum the number of mobsters that have infiltrated some unions like the Teamsters' Union. Incidentally, hearings the past two years show that the Teamsters Union, next to the United States Government, perhaps is the most powerful organization in the Nation.

Latin America Building roads Twenty Latin American countries have drawn plans for heavy construction projects totaling more than $16,000,000,000, the Pan American Union in the Nation's Capital says. Each country has one thing in common: It is stepping up its road construction program. Actually, highway building and electric power construction are expected to be among the biggest construction items for the next several years.

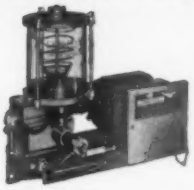
Bills seek Tax cut A series of bills designed to reduce the Federal automotive excise tax burden is pending before the House Ways and Means Committee. A measure by Representative Rabault of Michigan, for example, would repeal excise taxes on automotive parts and accessories at the manufacturers' level. Also it would reduce from 10 percent to 5 percent the tax on trucks and busses. With the Treasury sorely pressed for funds to meet the daily stream of obligations, the repealer proposals will not get far this year.

SS taxes To go up That January 1 jump ($94.50 to $120 maximum) in your Social Security taxes was a drop in the bucket as compared with what it is going to be in less than 10 years. Even if no new Social Security taxes are added by Congress, the tax increase is going to rise 80 percent. Here is the maximum tax-increase schedule in maximum figures: For 1960-62, $144; 1963-65, $168; 1966-68, $192; 1969, $216. The original aims of socalled social security have been thrown out the window. Congress has passed enlarged benefits each election year since 1950.

Safety belt Requirement The day may be approaching when the Federal Government may require use of safety belts as protective items in its many thousands of motor vehicles. Leading the way is the Department of Health, Education and Welfare. The Department has ordered installation of safety belts in its 1,400 vehicles. The Public Health Service, a division of HEW, holds that all motor vehicle owners would be wise to install safety belts. PHS says motor vehicle accidents cause 40 percent of all accidental deaths.

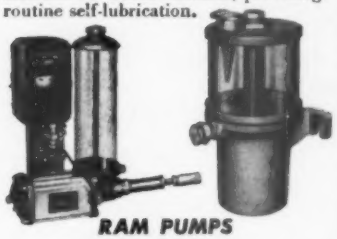
Launch drive For clean air With air pollution an increasing health menace, the Public Health Service says an increasing number of cities are planning to attack the problem. Congress has authorized an annual $5,000,000 appropriation for air pollution research, but has never appropriated the amount. It is estimated that industry alone is already spending more than $300,000,000 a year installing and maintaining air pollution equipment. Ten years from now the outlay may be doubled or tripled. END

NEW LINCOLN CENTRALIZED LUBRICATION SYSTEMS



ELECTRO-LUBERS

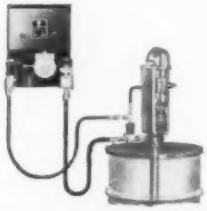
Compact, efficient electric-powered lubricant pumps supply oil or grease to banks of injectors in a centralized system. Become integral part of individual machine on which installed, providing routine self-lubrication.



RAM PUMPS

High or Low Volume Output

Low-cost, easy-to-install. Systems designed to provide automatic or semi-automatic lubrication of bearings, simultaneously, on single machine units while in operation. May be actuated mechanically, electrically, or manually. Dispense oil or grease.



CENTR-O-MATIC SYSTEMS

Heavy duty, air-operated pump supplies lubricant to large machine groups from original 400-lb. refinery drum. Can lubricate thousands of bearings at great distances. Adjustable time clock control automatically cycles system, according to predetermined oil or grease requirements. When all injectors in circuit have cycled, pump shuts off and vents self.

Just Published!
A REPORT TO MANAGEMENT
* How modern lubrication methods can reduce operating costs and improve production
Another service to industry from Lincoln Engineering Company - Saint Louis

Complete facts on HOW TO REDUCE OPERATING COSTS through MODERN LUBRICATION METHODS

- Comprehensive, fully-illustrated 16-page brochure
- Shows how and why centralized lubrication can save thousands of dollars
- Illustrates case histories of uses in all major industries
- Lists five practical steps for converting to automatic lubrication
- Presents application data on basic centralized systems
- Describes power lubrication for automation

LINCOLN OFFERS MODERN PROTECTION FOR a vast range of cement processing machinery, such as burned cement coolers, brick presses, concrete block fabricating machines, single surface screens, hammer mills, jaw crushers, feed tables, automatic jiggers, bucket cranes, sintering machines, power shovels and draglines.

Lincoln

LINCOLN ENGINEERING COMPANY

Division of The McNeil Machine & Engineering Co.

St. Louis 20, Mo.

▼MAIL THIS COUPON TODAY!

LINCOLN ENGINEERING COMPANY
5702-8 Natural Bridge Avenue
St. Louis 20, Missouri

Please send my complimentary copy of ☐ "A REPORT TO MANAGEMENT" ☐ Ram Pump Bulletin No. 812 ☐ Electro-Luber Bulletin No. 815 ☐ Centr-o-matic Catalog 81

NAME..... TITLE.....

COMPANY.....

ADDRESS.....

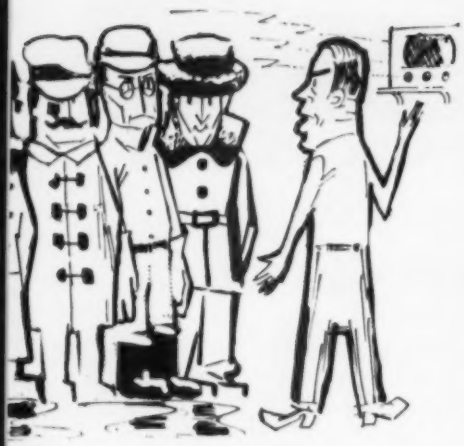
CITY..... ZONE..... STATE.....

Enter 1016 on Reader Card

How would you decide?

A round-up of actual day-to-day in-plant problems and how they were handled by management men

Must you pay men who report when plant is closed?



What Happened: Despite a 23-in. snowfall, 14 employes showed up for work. The plant manager said to the men: "Didn't you hear the radio broadcast announcement that we would be closed?"

"I had my set turned on, and there was no announcement about our closing down," one of the men replied.

"Well, I gave orders for an announcement. If there wasn't one, you fellows are entitled to 4 hours' reporting pay. Meanwhile I've got work here cleaning off the snow, enough work for a whole day for those who want it," the manager said.

The 14 employes met outside and decided to turn down the offer of work. "We can get 4 hours' pay without working," one man said. "The company was supposed to notify us not to come to work. They didn't."

"What if there was an announcement?" someone asked.

"If we didn't hear it, we were not properly notified," was the answer.

They all went home. The next day the company checked and found that an announcement had been made over the local radio. Nevertheless the employes filed a grievance on the grounds that the notice was not effective because they hadn't heard it.

Were the employes:
Right? ☐ **Wrong?** ☐

What Arbitrator Tischler ruled: "Use of local radio station was the only practical method of notification, and it was the method which the employer had agreed to use in such situations. It may be that some employes may not have heard the announcement or even that some employes may not have had their radios working because of power failures in the area, or there may have been employes listening to other stations. But this does not change my finding that employes had constructive notice that the plant would be closed. The employes are not entitled to reporting pay."

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to *Rock Products*.

Is it a wage cut if the employer discontinues the annual "holiday turkey?"

What Happened: For over 10 years, the management gave a turkey to every employe for several holidays through the year. But business was so poor during the current year that the company decided to eliminate this in order to save money.

The union protested that this was

a wage cut, and cited the contract which said that "local working conditions and practices should not be changed during the term of contract."

The management took the position that the turkeys were gratuities and not part of the union pact.

Was the company:
Right? ☐ **Wrong?** ☐

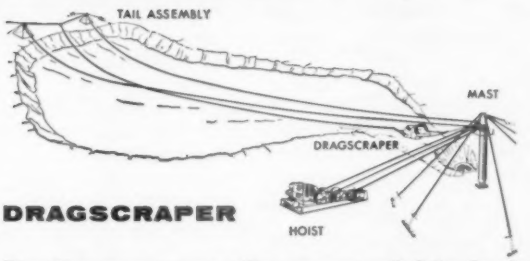
What Arbitrator Schmidt ruled: "Employers frequently expend company money for various employe benefits which have never been looked upon as compensation that the employes can demand be continued. The outfitting of athletic teams, picnics, scholarships for employes' children, presents at the birth of employes' children—these are but a few examples of sometimes fairly costly things which are being done by enlightened employers in many plants today. No general 'Prior Agreement' clause or 'Past Practice' provision would compel a company to continue such programs if it wished to terminate them. In my judgment, the giving of turkeys at holidays is in the same general category as above. It is a gratuity above and beyond the agreed compensation. The company is not obligated to continue."

(Continued on page 24)

Cut Materials Handling Costs in Half . . . Dig *and Haul* with a Sauerman Machine

Operating costs as low as 6¢ per ton are reported by Sauerman DragScraper and Slackline Cableway owners. This cost includes labor, power and maintenance when digging free-caving material on average haul distances.

When you use a Sauerman DragScraper or Slackline Cableway, one machine does *both* digging and hauling from deposit to plant. No double handling is required. You cut labor and equipment costs in half—or even more—because a single Sauerman Machine, controlled by one man, replaces the multiple equipment needed for other methods.

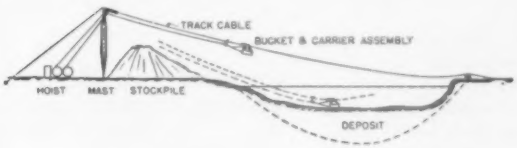


DRAGSCRAPER

DragScrapers are usually recommended for bank or pit deposits. They dig from hillsides or underwater as easily as on level ground and can haul directly to hopper or field conveyor. The Sauerman DragScraper hoist is designed for continuous duty and many years of service. The operator's control station may be remotely located for maximum visibility of deposit and plant.

DragScrapers are built in sizes from 1/3 to 15 yds. to satisfy practically all tonnage requirements.

SLACKLINE CABLEWAY



When deep digging is required or anticipated in the future, a Sauerman Slackline is usually best for the job. This powerful excavator can dig 100 ft. below water, lift its load and deliver the material to a stockpile on a 1000-ft. span.

The Slackliner Bucket inhauls at high speed and dumps automatically. Dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point, completing the fast operating cycle.

The use of a stockpile permits a single 2-yd. Slackline Cableway to handle the material requirements of a 200-tph. plant. Slacklines are built in sizes up to 3½ cu. yds.

★

Find out how you can save with a Sauerman Machine. Write or call, giving tonnage requirements and a description of your deposit. Sauerman engineers will supply their recommendations on the most economical machine for you.

SAUERMAN BROS., INC.

630 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS
Linden 4-4892 · Cable CABEX—Bellwood, Illinois

50th Anniversary Year

CRESCENT DRAGSCRAPERS • SLACKLINE AND TAUTLINE CABLEWAYS • DUROLITE BLOCKS

Enter 1011 on Reader Card

Labor Relations

continued from page 22

Is refusal to testify grounds for discharge?

What Happened: Mr. X was a mechanic with 8 years of seniority. His work record was good. At a hearing before the Committee On Un-American Activities, a woman testified that X was once a member of the Communist Party. The accuser herself had joined the Communist Party at the suggestion of the FBI.

X was subpoenaed to appear before the Committee. He asked his company for a two-day leave, which was granted. After being sworn in before the Committee, he refused to testify, pleading the Fifth Amendment.

When he returned to work, he was at first suspended and then fired. The company offered these reasons:

1. These hearings were covered by the press and television. X was identified as one of our employes. This caused us embarrassment.
2. We received 10 anonymous telephone calls from people who said they wouldn't use our services if we had a "Communist" on our payroll.
3. X's action served to undermine public confidence in us.

The employe answered:

1. I'm only a mechanic. I have no influence over public opinion.
2. I was never warned that I would be fired if I refused to testify. When I asked for a leave of absence, I was not told by the company that I might be disciplined if my testimony hurt the corporation in any way.
3. What specific rule did I violate?

Was the employe:
Right? ☐ **Wrong?** ☐

What an Arbitration Board ruled: "The Board is convinced that any company policy, which may be invoked to impose so severe a penalty as discharge, must be made known in some effective way to the employes to whom it applies. Here it is clear that the grievant was neither informed of this company policy, nor was he warned when he requested time off to answer the subpoena. The company must sustain the burden of proof in substantiating the allegation that X's conduct so discredited and embarrassed it that the discharge was justified. A thorough study of the record and exhibits filed in this case leads us to the conclusion that the company has failed to sustain the burden of proof that its prestige or reputation was damaged by the conduct of X—or that it suffered any loss of business. The most that can be said in support of the company's position is that there was a momentary reaction on the part of a few members of the public. This is not sufficient to justify the severe penalty of discharge. X is to be reinstated."

If a new job is created in the same department, must it be given to the senior employe?

What Happened: When a new job was created in the receiving department, this company hired someone from the outside. Belle Sarova put in a complaint claiming that because she was the senior girl in that department, she was entitled to the new job. The company did not agree. It said:

1. This job pays no more than what Belle gets.
2. We have a promotion policy here based on seniority, but that applies only to movement into jobs with higher rates.
3. If we allowed horizontal transfers based on seniority, it would cause a lot of confusion every time we established a new job or when somebody left.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Kelliher ruled: "Considering the definition of the word 'promotion' as it is used in practice, it means transfer of an employe to a higher job classification. It does not encompass mere lateral movement. The company is right.

What should a union official do to stop a threatened wildcat strike?

What Happened: When foreman Jackson put a group-leader on production work, Bill Harton, chief steward for the union, protested: "That work should be given to people in the bargaining unit. That group-leader is not in the union and should not be taking bread out of the mouths of our people."

Foreman Jackson took out the contract and showed the chief steward the provision which, he felt, gave him the authority to do what he did. They argued about it and finally the foreman said: "If you don't agree with me, use the grievance machinery."

The steward asked for permission to talk to the employes in the department. This was granted, and he said to the employes: "That group-leader is taking work away from us. What do you think we should do?"

"Let's walk out," one of the employes suggested.

"How many here want to walk out?" the steward asked. All the employes raised their hands.

"In that case, there's nothing else to do," was the steward's comment. Whereupon the employes all walked off the job. The next day Steward Bill Harton was fired. He protested.

The company argued: Bill was a chief steward for many years. He knew his responsibilities. It was his job to:

1. use the grievance machinery
2. dissuade the employes from walking out.

Bill defended himself: "It wasn't my idea to walk out. I was pressured into it by a 100 percent vote of the employes. Why put all the blame on me? The company did nothing to stop the walkout."

Was Bill:
Right? ☐ **Wrong?** ☐

What Arbitrator Wolff ruled: "A steward's job is to assert positive leadership and discourage improper actions by employes. Harton was well-versed in the terms of the contract, which had a grievance procedure. This should have been used. I find that Harton's discharge was justified." END

Enter 1000 on Reader Card

DON'T LET THIS KIND OF PUNISHMENT AFFECT YOUR PROFITS!

Texaco Simplified Lubrication Plan uses just 6 lubes to protect all your major equipment against dust, shock and vibration

When profits are measured in pennies per yard, maintenance costs can be a big factor on the balance sheet, particularly when equipment has to operate under severe conditions. Take the beating it gets from shock, for instance. Five tons of rock dropped into a truck puts a sudden, severe strain on axles, bearings and springs. Unless you have the right lubricants, in the right amounts, in the right places, your truck is going to need overhauling at uneconomically short intervals.

Texaco Lube Plan can stretch maintenance intervals. With the Texaco Simplified Lubrication Plan, you can set up maximum lubrication intervals based on the experience that Texaco has had with hundreds of similar applications. The Texaco Lubrication Engineer will work with your mechanics, helping to specify the right lubricants for each piece of equipment. And because the Texaco Plan is based on a proven combination of just six multi-purpose and specialty lubricants, it can mean significant savings in inventory, less storage problems, and can drastically reduce the danger of misapplication.

Get the full details

Your local Texaco Lubrication Engineer can give you complete information on the Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

PEOPLE

IN THE NEWS

O'Leary is new Ruberoid Co. board chairman

E. J. O'LEARY, president and chief executive officer, has been named chairman of the board of The Ruberoid Co., New York City. He replaces Herbert Abraham, chairman since 1954, who resigned the post but continues as a director and as chairman of the executive committee.

The firm also named E. N. Funkhouser of Hagerstown, Md., as a director. He was co-founder and president of The Funkhouser Co., maker of roofing granules, mineral stabilizers and mica, which was acquired by Ruberoid at the end of 1958. Mr. Funkhouser replaces the late John J. Flood on the board.

Mr. O'Leary came to the firm's executive offices in New York City as general sales manager in 1950, after holding executive manufacturing and sales posts with other firms in the asphalt and asbestos building-products industries. He was elected a vice president in 1951, director in 1952, a member of the executive committee in 1953, executive vice president in 1955 and president in 1958. He is board

chairman and on the executive committee of the Asphalt Roofing Industry Bureau, a past president, director and on the executive committee of the Asbestos-Cement Products Association and a director of the Gypsum Assn.

Alexander is Southwestern Portland vice president

JOHN B. ALEXANDER, director of research and chemistry for Southwestern Portland Cement Co., Los Angeles, Calif., has been elected vice president and chemical director.

Insulrock names three

EDWARD W. DOUGLASS has been named general sales manager of The Flintkote Company's Insulrock Div., East Rutherford, N.J. Formerly Mr. Douglass was with Tectum Div. of Peoples Research & Manufacturing Co., Newark, Ohio, makers of roof tile and plank, as marketing director.

In other moves, Flintkote announced that R. J. Mulligan is new assistant general sales manager of the special products division. He had been sales manager of the Insulrock Div. Howard E. Walker has begun work with the Insulrock Div. on special assignment to the research department. He has long experience in insulation research, including work on fiberglas.

Vencill, Williams named at Kentucky Stone

RAY VENCILL, vice president of the Kentucky Stone Co., Louisville, has been promoted from head of western operations to chief of the firm's larger eastern division. Named to succeed him was John P. Williams, superintendent of Kentucky Stone's Russellville, Ky., quarry. Mr. Vencill moves to the Lexington-Richmond, Ky., area, while Mr. Williams now makes his headquarters in Elizabethtown.

G. L. Darlington named Canada Cement comptroller

G. L. DARLINGTON is new comptroller of the Canada Cement Co., Montreal, Quebec. He had been assistant secretary-treasurer of the firm.

Hanlon, Weigel named executives at Medusa

W. B. HANLON and James F. Weigel have been appointed assistant vice presidents of the Medusa Portland Cement Co., Cleveland. Mr. Hanlon, formerly director of engineering, becomes assistant vice president — engineering. Mr. Weigel is assistant vice president for technical service and quality control; he had been technical director.

Mr. Hanlon will be in charge of all company engineering projects, construction projects, plant maintenance and repair work. He has been with Medusa for 19 years, serving first as operating engineer and chief engineer. A civil engineering graduate of Michigan State University, East Lansing, Mr. Hanlon is president of the Cleveland section of the American Society of Civil Engineers.

Mr. Weigel is now in charge of these operatons at Medusa: chemical, technical service and geology. A chemical engineer, he has been with Medusa for 18 years, most recently as technical director.

W. B. Hanlon

J. F. Weigel

(Continued on page 28)

P&H Diesel Model 687C-18 with Cotta 1.46 to 1 transmission and dual air cleaners at the rear.
50 KW generator, 240 volt—1800 rpm with dust-tight package controls, driven from front end.
NEW

P&H DIESEL-ELECTRIC POWER PACKAGE

a compact unit... only 4850 lbs. complete!

P & H combination power unit and generator set powering a Baldwin-Lima-Hamilton 201E Crusher through a Cotta Reduction Gear and driving a 50 KW generator. Owned by Yoder Asphalt, Inc., Elkhart, Ind. Sold by Korte Bros., Ft. Wayne, Ind.

With many portable crusher operators switching to electric motors for powering conveyors and auxiliary equipment, P&H has designed the ultimate in a compact, lightweight "power package".

It's the 205 H.P., 6 cylinder P&H Diesel and 50 KW generator. Engine, Cotta Gear, generator and base weigh just 4850 lbs. complete—*up to one half ton lighter than comparable equipment.* The generator, driven directly off the engine crankshaft through a flexible coupling, is a feature of P&H modern design that eliminates belt wear, slippage and maintenance. The P&H Diesel itself has these added advantages:

- **More power**
- **Higher torque**
- **Faster starts**
- **Better idling**
- **Big weight savings**
- **Greater fuel economy**
- **25% fewer parts**
- **All wearing parts interchangeable**

P&H Diesel units are also available as direct power and for diesel-electric generators. It will pay you to specify P&H Diesel for your new crusher or your next repowering job. Contact your P&H dealer. Or write, Dept. 420A.

HARNISCHFEGER

P&H Diesel Engine Division
Crystal Lake, Illinois

Enter 1013 on Reader Card

PEOPLE IN THE NEWS

(Continued from page 26)

Waters, Beanway named at Carter-Waters

ALBERT R. WATERS was named executive chairman of the board and Walter E. Beanway, president, of The Carter-Waters Corp., Kansas City, Mo. Mr. Beanway moves into a post held by Mr. Waters, who assumes a newly created position.

A. R. Waters W. E. Beanway

A co-founder and president of the firm since 1940, Mr. Waters organized the company in 1922 together with E. Kemper Carter and R. Crosby Kemper. Mr. Beanway joined the maker of lightweight aggregates and concrete products in 1931. He had been executive vice president and general manager since 1952.

Other officers of the firm, all re-elected, are Richard L. Coleman and Robin E. Walker, vice presidents; Paul J. Kirner, treasurer, and John E. Bethel, secretary.

National Gypsum names Proctor plant manager

JOHN B. PROCTOR is new manager of the New York City gypsum products plant of the National Gypsum Co., Buffalo, N.Y. He had been manager of the firm's gypsum products plant at Clarence Center, N.Y.

After 16 years' experience in engineering and plant management posts with Canadian and American building products companies, Mr. Proctor joined National Gypsum in 1954 as a production engineer.

Stewart is president of American Mineral

BLAIR W. STEWART has been elected president of American Mineral Co., Los Angeles, producer and processer of talc and other nonmetallic minerals. Mr. Stewart has also been named a director of both American Minerals and its affiliated company, Desert Minerals, Inc.

Campbell, National Gypsum, heads bag committee

F. ROBERT CAMPBELL, manager of packaging for National Gypsum Co., Buffalo, N.Y., has been elected chairman of the Packaging Institute's bag committee. The Institute is a national association of packaging material manufacturers and industrial consumers. The bag committee studies consumer and industrial problems of bag making and use.

Mr. Campbell joined National Gypsum in 1953 after 17 years in the packaging field. He is in charge of the building materials firm's product packaging program.

Accountant Rathmann retires

PAUL F. RATHMANN, accounting supervisor of the National Gypsum Co., Buffalo, N.Y., retired Feb. 27 after 41 years. Beginning in 1918 Mr. Rathmann worked with American Cement Plaster Co., Universal Gypsum & Lime Co. and National Gypsum. Termed "one of our most valuable and best liked executives" by president Fred Manske, Mr. Rathmann will continue as accountant for National's employes' credit union.

Ideal's Matthews heads Colorado penal committee

MURRELL O. MATTHEWS, executive vice president of Ideal Cement Co., Denver, Colo., has been named head of a special state committee to oversee the revamping of Colorado's set-up for penal and custodial institutions. Gov. Steve McNichols appointed the committee, a move recommended in a report on the state's institutions prepared by a team of U. S. Public Health Service experts.

OBITUARIES

M. Moss Alexander, chairman of the board and president of the Missouri Portland Cement Co., St. Louis, Mo., died February 26. President of the firm for more than 25 years, he previously was sales manager for the midwestern producer.

James J. Mitchell, manager of the Mamaroneck Stone Corp., Mount Vernon, N.Y., died February 9 after a brief illness. Mr. Mitchell was a son of the late John Mitchell, one time president of the United Mine Workers of America and vice president of the American Federation of Labor. James Mitchell was 64.

Walter M. Barbee, vice president, treasurer and a director of the Gibsonburg Lime Products Co., Gibsonburg, Ohio, died February 18. He had been associated with the firm from 1936 until his recent retirement.

Junius R. Case, founder of the White River Lime Co., Batesville, Ark., and developer of Casite, a cleaner used in automotive engines, died March 5 in Jonesboro, Ark.

Sir Walker Shepherd, board chairman of Turner & Newall, Ltd., London, England, an international asbestos manufacturer, died February 27. He was traveling in Canada at the time of his death. Sir Walker was knighted in 1956. He was 63.

Donald S. MacBride, president of the American Cement Corp., Philadelphia, died March 9 after a short illness. In the cement business for 40 years, Mr. MacBride had been president of the Hercules Cement Corp., Philadelphia, before it combined with Peerless Cement Corp., Detroit, and Riverside Cement Co., Los Angeles to form American in 1957.

A graduate of the University of Pennsylvania with a B.S. degree in civil engineering, Mr. MacBride started his career in the cement industry in 1919 as district engineer with the Portland Cement Association. He later served as vice president of the Indiana and Pennsylvania divisions of Lone Star Cement Corp., New York City, and as manager of its Incor division. Then, 20 years ago, he began his career with Hercules, serving successively as vice president for sales, executive vice president and president. He was 65.

John H. Hagerty, president of Tobin Quarries, Inc., Kansas City, Mo., died March 2. He had been ill about six months. Mr. Hagerty lived most of his adult life in Chicago, where he was in the property management and realty business. During World War II, he was awarded two Navy citations for special service as a civilian; they were for establishing accounting systems and for the housing and feeding of Navy students attending Northwestern and DePauw Universities. He was 63.

END

STRAIGHT DOPE about Bemis Extensible Multiwalls

right from (you'll pardon the expression) the horse's mouth

Who knows best how filled multiwalls handle? . . . what kind of service they will give?

The men who handle them, of course.

So, read these comments about Bemis Extensible Multiwalls by men who know from experience:

Cement plant superintendent:
"These extensible bags are the best paper bags we have ever used. As far as I am concerned, we won't use anything else."

Cement packhouse foreman:
"I caught my men amusing themselves by letting these 'rubber' bags run off the end of the conveyor and bounce on the cement floor. Our regular bags burst on this drop."

Assistant cement packhouse foreman:
"We broke only two bags in two weeks. We don't want anything else."

Assistant cement plant superintendent:
"Sure, we will work with you to improve carloading; but your extensible bags have eliminated our serious customer complaints."

Cement company traffic manager:
"I didn't believe you before, because I have heard exorbitant claims in the past. Now I am sold—we haven't had a serious complaint since we switched to your 'stretch' bag."

Building materials dealer:
"They (extensible bags) feel and handle something like the old cotton sacks. They stand rehandling better than the bags we have been getting. We even have refill bags left over. Whatever it is, we want more."

Those are the voices of experience. But try 'em yourself . . . and prove by your own experience. Call your Bemis Man right away about Extensible Multiwalls.

Bemis

General Offices—408 Pine Street, St. Louis 2
Sales Offices in Principal Cities

Enter 1012 on Reader Card

INDUSTRY NEWS

Installation of new kiln is symptomatic of cement industry gains. Six new plants will be completed this year *photo courtesy Allis-Chalmers Mfg. Co.*

Forecast: cement sales may rise 10 percent this year

NOTING THAT CONSTRUCTION dollar volume should rise by anywhere from 3 to 7 percent in 1959, and highway spending even more, the nation's cement producers paint a generally rosy picture of the year's sales prospects.

Samples: Ideal Cement believes shipments could jump as much as 10 percent above 1958, buoyed by the fine highway outlook. It expects that its own shipments will gain by at least that much, since its plants are in the West and South, "areas of greater than average growth."

Most producers say that order backlogs in January were higher than last year. Alpha reports that its backlog of orders set for 1959 shipments was "heavier . . . than . . . for many years." Whitehall reports that in its Middle Atlantic marketing area, its "backlog is exceptionally favorable." Marquette notes that unfilled orders at year end were 21 percent more than a year ago.

Medusa says that while its big Illinois Tollway business is over, since the $500-million project is completed, shipments to its markets should increase by 5 percent this year. Lehigh expects 1959 shipments nationally to rise by almost 6 percent to 325 million barrels. It notes that, of Interstate Highway contracts let thus far, 55 percent are for concrete and 12 percent for soil cement or concrete base. Only 33 percent are solely for flexible-type asphaltic concrete.

But not all producers had the rosy glow of unchecked optimism. Big Canada Cement expects construction to remain at 1958 levels in its markets, says cement demand should be sufficient to enable its plants to operate efficiently, though somewhat below capacity. Longhorn Portland reports lower 1959 backlogs, but hopes sales to the big oil industry, down last year, will show improvement this year. Others, particularly producers on the east coast, recognize the serious challenge of imported cement.

Construction forecasts buoy industry optimism

PRIVATE SPENDING for construction was up 9 percent above 1958 for the first two months of the year, the Departments of Commerce and Labor reported. The gains, to a record $5.1 billion, were due mainly to a sharp 30-percent rise in homebuilding; it more than offset a 35-percent drop in spending for private industrial plants. During the first two months of the year, private nonfarm housing ran at an annually adjusted rate of over 1.3 million. Last year the rate was below a million at that time of year.

During the same two-month period, public construction rose 16 percent above last year to $2 billion, chiefly because of more highway building. Federal Highway Administrator Bertram D. Tallamy said the entire federal-aid highway program is running 6 percent ahead of projected goals for the 2½ years since its inception, in terms of funds obligated.

Spending for new plant and equipment will rise slightly to $31.8 billion this year, from the $30.5-billion level of 1958, government agencies reported. This projected plant spending would make the year the third best in history, behind the record $37 billion of 1957.

Fewer new cement plants this year

THE RECENT EXPLOSIVE EXPANSION of the portland cement industry has leveled off somewhat, plans for new plants set for completion this year in-

(Continued on page 32)

Enter 1018 on Reader Card

"Our Material Readily Meets Specifications"

SAYS SEAFORD SAND & GRAVEL INC., SEAFORD DELAWARE

Eagle Aggregate Processing Equipment readily enables Seaford Sand & Gravel Co. to meet Delaware State Highway Department Specifications. It does three things for them:

1. Washes the fine material, removing any loam encountered in the deposit.
2. Classifies the fine material, producing a high quality concrete sand that is well within specifications.
3. Washes impurities from the coarse material, thus providing sparkling clean gravel.

All this has been accomplished with a modest investment that will quickly return its cost.

The Eagle Equipment consists of a 20′ Water Scalping-Classifying Tank with power-operated, automatic Bleeder Valves and 3-cell Collecting-Blending Flumes; a 36″ x 25′ Single Screw Fine Material Washer-Classifier-Dehydrator and an 18″ x 15′ Single Screw Coarse Material Washer-Dewaterer.

While concrete sand is the main fine material produced here, other blends of sand can also be made on demand.

Whether it is Delaware or the Dakotas—New England or New Mexico—wherever there is aggregate that needs beneficiation, Eagle Equipment—backed by 87 years of experience—can do the job better and at lower cost. Get the facts—send for Catalog 58.

SINCE 1872

EAGLE IRON WORKS

ENGINEERS • MANUFACTURERS

137 Holcomb Avenue • Des Moines, Iowa

EIW
EAGLE IRON WORKS

FACTORY-TRAINED DISTRIBUTORS THROUGHOUT THE U.S. AND CANADA

(Continued from page 30)

dicate. While 10 U. S. plants and two in Canada were completed last year, just six plants, all in this country, are set for completion in 1959. They will add about 11 million bbl. a year to the U. S. total cement capacity. Cost of the six is just over $80 million.

One estimate has it that 21 existing plants will undergo improvements and expansion this year which will boost the capacity total by another 5 million bbl. Equipment producing another 5 million bbl. will be replaced. Cost of the 10-million-bbl. total replacement and expansion will be about $45 million.

The six new U. S. plants this year:

1) Southwestern Portland Cement Co., Los Angeles, Calif., is building a plant near Odessa, Tex. The firm already has three plants, one each in California, Texas and Ohio. The new $12-million Texas plant is a dry-process set-up using one kiln of 1.25-million-bbl. annual capacity. The state had 14 plants at year's end with an annual capacity of about 36 million barrels. About 22.3 million bbl. of cement were consumed in the state last year, 62 percent of rated capacity at year's end.

2) Arizona Portland Cement Co., Phoenix, subsidiary of California Portland Cement Corp., planned completion of a $12-million plant near Ash Fork, Ariz., for sometime this spring. In 1958 the state had only one plant with capacity of about 2.7 million barrels. Roughly 3.6 million bbl. of cement were consumed there.

3) The American Cement Corp., Philadelphia, announced in December the formation of its Phoenix Cement Co. division. Scheduled for completion in August, the division's $16-million, 1.5-million-bbl. plant at Clarkdale, Ariz., will be the state's third. It will boost rated state capacity to more than 5 million bbl.

4) Ideal Cement Co., Denver, Colo., planned to complete by this month its 1-million-bbl. plant at Tijeras, N.M., at a cost of $12 million. About 2.4 million bbl. of portland cement were shipped into the state last year, which had no plant at the time.

5) Columbia-Southern Chemical Corp., Columbia Cement Div., Zanesville, Ohio, plans to complete its second plant, at Barberton, Ohio, late this year. The 1.5-million-bbl. installation is costing a reported $7 million. Last year the state had 10 plants with 21-million-bbl. annual capacity; consumption was about 16.2 million bbl., or 77 percent of state capacity.

6) Dundee Cement Co., Dundee, Mich., expects to complete its $25-million, 5-million bbl. plant there in October. The new installation is located about half way between Michigan and Toledo, Ohio, and is near Lake Erie. Availability of raw materials locally, proximity of a large population center and good anticipated market growth are the three reasons the plant was built in southeastern Michigan, general manager Roblee B. Martin reported.

General manager Martin inspects progress on the Dundee quarry

He explained that the state will be one of the fastest growing in the next decade, with the St. Lawrence Seaway contributing importantly to faster-than-average growth of all Great Lakes states.

The plant's two kilns will be the largest ever built on this continent for the cement industry, at 460-ft. long and from 15 ft. to 16 ft. 6 in. in inside diameter. Daily capacity of each kiln: 6,600 bbl. of clinker.

The company, associated with Holderbank Financiere Glaris S. A., a Swiss firm, expects to employ about 200 people when in full production.

Portland cement consumption in Ohio, Michigan, Indiana, Illinois and Wisconsin was 63 million bbl. last year, or about 78 percent of the 81-million-bbl. capacity of the 28 plants there. Dundee also plans to build a storage and packing plant in Chicago.

Reviewing 1958, cement producers report good year

SHIPMENTS OF PORTLAND CEMENT rose by 6 percent last year to 307 million bbl. Annual reports of some of the nation's producers reflect this favorable picture.

Ideal Cement Co., Denver, Colo., reports 1958 sales were up a healthy 17 percent to $95.3 million. Earnings were up 19 percent in 1958 to $17.3 million. An important reason for the boosted sales and earnings was completion of two new plants—at Houston, Texas, and Ada, Okla. The 2.8-million-bbl. Houston plant came on the line in May, and the first half of the 3-million-bbl. Ada plant was completed in October.

North American Cement Corp., New York City, reported sales down 1 percent last year to $17.1 million. The firm's annual report notes that its northeastern United States marketing area didn't share in the 6-percent national gain in shipments. Too, North American pointed out that domestic producers in the area were hurt by cement imports.

Permanente Cement Co., Oakland, Calif., reports that sales boomed up 20 percent to $67.4 million. However, 1958 was the first full year of operation at the new 2.5-million-bbl. Cushenbury, Calif., plant. And 1.75-million bbl. of capacity were added when the firm purchased Olympic Portland Cement Co., Seattle, Wash. Finally, the resurgence of construction in dams—Wanapum, John Day and Ice Harbor—gave Permanente a shot in the arm.

Medusa Portland Cement Co., Cleveland, Ohio, noted that its sales rose to $33.3 million, a 13-percent gain from 1957. The firm reported that while cement shipments into its 7-state marketing area dropped 4 percent from 1956 to 1958, Medusa's shipments increased 10 percent. The 7 states are Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania and Maryland. Other firms reported:

Producer	Net sales, 1958 (Millions of dollars)	Percent change from 1957
Allentown Portland Cement Co., Allentown, Pa.	12.1	down 6
Alpha Portland Cement Co., Easton, Pa.	33.2	up 7
American Cement Corp., Philadelphia, Pa.	51.8	down 7
Bessemer Limestone and Cement Co., Youngstown, Ohio	10.0	down 19
Calaveras Cement Co., San Francisco, Calif.	13.0	up 3
Consolidated Cement Corp., Chicago, Ill.	12.4	up 19
Dewey Portland Cement Co., Kansas City, Mo.	15.4	up 6
General Portland Cement Co., Chicago, Ill.	46.9	up 24
Glens Falls Portland Cement Co., Glens Falls, N.Y.	5.2	down 2
Keystone Portland Cement Co., Philadelphia, Pa.	11.4	down 7
Lehigh Portland Cement Co., Allentown, Pa.	76.0	up 7
Lone Star Cement Corp., New York, N.Y.	99.7	up 5
Longhorn Portland Cement Co., San Antonio, Tex.	8.8	up 21
Louisville Cement Co., Louisville, Ky.	13.5	up 12
Marquette Cement Mfg. Co., Chicago, Ill.	54.0	up 12
Missouri Portland Cement Co., St. Louis, Mo.	20.7	up 14
Pacific Cement & Aggregates, Inc., San Francisco, Cal.	28.1	up 11
Penn-Dixie Cement Corp., New York, N.Y.	47.0	up 15
Whitehall Cement Mfg. Co., Philadelphia, Pa.	8.8	up 1

(Continued on page 41)

B.F.Goodrich

Smileage!

PULL TO TEAR OUT

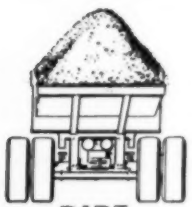
How to get more service from off-the-road tires

Watch out for overloading

Overloading reduces tire service—puts severe, often expensive, strain on other parts of the equipment. Carrying more than the rated load increases the danger of costly tire failures and disrupted work schedules. Make sure you know the proper load limits for your vehicles, and you will avoid these

Effects of overloading

1. Overflexing—breaks down tire cord body.
2. Greater impact when tire strikes an obstruction—more likelihood of cord damage.
3. Strained tire beads—resulting in complete tire failure.
4. Increased chance of cutting—rate of tread wear skyrockets.
5. Severe pounding action—causes tread and ply separation.



DIRT

With packed earth, weighing 2570 lbs. per cu. yd., these tires may not be overloaded. But with a similar load of marl clay weighing 3700 lbs. per cu. yd. tires would be overloaded.

COAL

Tires may be fully loaded with bituminous coal weighing only 1435 lbs. per cu. yd., but if other types weighing up to 2270 lbs. per cu. yd. are hauled, fewer cubic yards should be carried.

ROCK

Watch volume of loads. For example, shale weighs 2800 lbs. per cu. yd. and sandstone up to 4500 lbs. per cu. yd. Looks and actual weight of loads can be deceiving.

Check tire inflation regularly

Air pressure should be checked once a day if possible, but never less than two or three times a week. Check tires when they are cool. Examine valve cores for leaks. Pressure "buildup" is normal. If pressure goes 15 lbs. over normal, reduce load or speed. Never "bleed" air pressure build-up under operating conditions, especially in hot weather.

Results of overinflation

1. Cords are stretched, lose as much as 35 to 40% of their tensile strength—too weak to resist impact breaks.
2. Rubber is under tension and susceptible to cuts.
3. Tread ground contact area is reduced, speeding rate of wear.
4. Less contact area lessens flotation, reduces traction, requires more power.
5. Equipment is pounded to pieces, driver fatigue is increased.

Results of underinflation

1. Tires flex severely, build up excessive heat which may cause ply or tread separation.
2. Edges scuff over the road. Tread center buckles causing rapid shoulder wear.

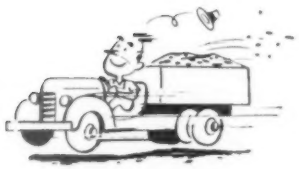
OVERINFLATION

UNDERINFLATION

PROPER INFLATION

9 Tire Care Tips

Respect for equipment and a keen interest in keeping it in good condition are characteristics that make one driver better than another. Here are some pointers a good driver never forgets—pointers that lead to increased tire performance and lower tire cost-per-mile or per-hour.



DON'T SPEED

Off-the-road tires are designed for speeds up to 30 mph, depending on the load carried. Excessive speed results in fast tread wear and heat build-up.

DON'T PIVOT

Pivoting on one wheel causes tire body distortion that loosens cords, damaging both tire and tube. It also tends to twist foreign objects into the tread.

DON'T JUMP LOADS

Banging tires against a barrier to speed up unloading can cause serious tire damage. Tilt the load more and gravity will handle the unloading.

DON'T SPIN WHEELS

Every turn of a wheel without traction scrapes off good rubber and wastes engine power.

DON'T DRIVE OVER OBSTACLES

Avoid sharp rocks and other objects that can damage tires and cause premature tire failure.

DON'T SLAM ON BRAKES

Quick stops scuff off tread rubber. Anticipate stops — brake gradually.

AVOID OIL

Rubber soaked in oil, gas or grease deteriorates quickly. Avoid areas where these substances are prevalent.

DON'T RUB TIRES

Side banks are just as detrimental to off-the-road tires as street curbs are to passenger car tires.

DON'T KEEP SECRETS

Report any unusual condition of tires, vehicle or road surfaces. Inspect your vehicle regularly.

PULL TO TEAR OUT

Make sure you have the right

The right tires give you lowest cost per mile!

B.F.Goodrich makes a complete line of off-the-road tires—both tubeless and tube-type—in a full range of sizes and tread designs. Each tire is engineered to give longer service under certain types of operating conditions. Make sure the tires you use were designed for the work you do, because the right tires give you lowest cost per mile!

All B.F.Goodrich off-the-road tires are available with FLEX-RITE NYLON cord construction. FLEX-RITE NYLON withstands double the impact of ordinary materials, resists heat blow-outs and flex breaks. The B.F.Goodrich FLEX-RITE NYLON cord body out-wears even extra-thick treads, can be retreaded over and over.

Rock Service

Newest, off-the-road tire on the market today prevents unnecessary tire failures. For mine, quarry and dirt-moving work. Regular, wide base and high tread types available. Sizes 12.00-21 thru 33.5-33.

Ribbed Logger

Running mate to the Rock Logger, this tire is designed for front or free-rolling wheels. May also be used on drive wheels where extreme traction is not needed. Sizes 9.00-20 thru 10.00-22.

All-Purpose

Designed for truck operators who use their equipment on both smooth pavement and dirt, gravel or mud roads. Up to 67% deeper tread digs in and pulls. Sizes 6.00-16 thru 12.00-24.

There's a B.F.Goodrich tire

tires for the work you do!

Rock Logger

For logging, transit mix and dump trucks, and the like. Use it in the rough and on short highway hauls. Ribbed tread and wire overhead types too. Sizes 10-22.5 thru 14.00-24.

Super Traction

Built for traction and flotation on power wheels of dirt-moving rigs working in sand, mud and soft dirt. Use tire in reversed position on free-rolling wheels. Sizes 18.00-24 thru 27.00-33.

Earth Mover Traction

This free-rolling tire is designed for scrapers, earth-moving wagons and heavy-duty pulled equipment. Gives modified traction too. Sizes 11.00-20 thru 24.00-29.

Tractor Grader

For drive wheels on road graders, motor patrols and tractors used in construction work, grading, road maintenance. Wide base and ribbed tread available. Sizes 9.00-24 thru 18.00-26.

for every off-the-road job!

PULL TO TEAR OUT

Operating conditions

The most important factor in operating conditions is the haul road. Proper planning of the road and work areas to prevent excessive braking and turning will save valuable time and cut tire costs.

Road maintenance

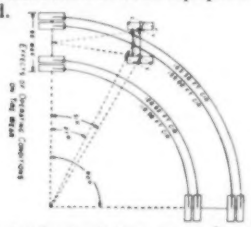
The road bed should be built and maintained free of severe depressions or chuck holes. Constant maintenance with a bulldozer or road grader will pay big dividends in reduced tire and equipment expense.

Tire clearance

Be sure tires do not rub against the body of the vehicle. Check regularly to avoid tire damage caused by loose or broken springs.

Water

Wet rubber cuts three to four times as easily as dry rubber. Eliminate water by ditching or pumping in areas where rubber-tired equipment is used.



The outside dual tire on a sharp curve travels considerably farther than the inside tire. It scrapes this extra distance.

Rely on expert on-the-job tire service to cut operating costs!

B.F.Goodrich Servicemobiles are equipped with hydraulic cranes, pneumatic wrenches, bead jacks and all the latest tools for on-the-job tire service—no matter how big the tire, how intricate the equipment, how complicated the job! B.F.Goodrich Service Men give you fast, expert service. Result: you save on downtime, eliminate unnecessary delays, reduce operating costs.

Tree stumps, boulders and other obstacles should be cleared from the haul road and working areas.

Be sure tire clearance is satisfactory at all times. Check for loose or broken springs which might damage tires.

5 no-obligation B.F.Goodrich services

Your B.F.Goodrich Tire Service Man will:

1. Inspect all your tires.
2. Point out tires that should be repaired or replaced.
3. Select tires for retreading by factory-tested and proved B.F.Goodrich methods.
4. Set up a proper inflation program.
5. Start you on a program of regular rotation and inspection.

Call the B.F.Goodrich store or dealer nearest you for all your tire and service needs

The B.F.Goodrich stores and dealers listed below are prepared to cut your operating costs and increase tire life with expert, on-the-job tire service. For a more complete listing in your area, consult the Yellow Pages of your phone book.

ALABAMA

ANNISTON . . . . . ADams 5-2571
BIRMINGHAM . . . . . FAirfax 2-0361
GADSDEN . . . . . LIberty 6-5271
HUNTSVILLE . . . . . JEfferson 6-2487
MOBILE . . . . . HEmlock 2-2961
MONTGOMERY . . . . . AMherst 2-1661
TUSCALOOSA . . . . . PLaza 2-4312

ARIZONA

PHOENIX . . . . . ALpine 3-6168
TUCSON—Baum & Adamson . . . . . MAin 3-3881

ARKANSAS

BLYTHEVILLE . . . . . POplar 3-4516
CAMDEN . . . . . TEmple 6-9334
FORT SMITH . . . . . SUnset 3-4124
LITTLE ROCK . . . . . FRanklin 4-5066
MALVERN 409
PINE BLUFF . . . . . JEfferson 4-5123

CALIFORNIA

BAKERSFIELD . . . . . FAirview 4-4701
BELL GARDENS—Gardner Tire Sales . SPruce 3-2811
EUREKA . . . . . HIllside 3-5708
FRESNO . . . . . ADams 3-5218
LOS ANGELES . . . . . RIchmond 9-6171
MODESTO . . . . . LAmbert 2-1865
OAKLAND . . . . . Highgate 4-2800
REDWOOD CITY . . . . . EMerson 9-4648
RICHMOND . . . . . BEkin 4-7271
SACRAMENTO . . . . . GIlbert 2-3811
SAN BERNARDINO . . . . . TUrner 8-0947
SAN DIEGO . . . . . BElmont 2-3131
SAN FRANCISCO—Perry & Whitelaw Inc. UNderhill 1-1801
SAN JOSE . . . . . CYpress 5-5050
SAN MATEO—Perry & Whitelaw, Inc. . Diamond 2-2051
STOCKTON . . . . . HOward 6-9691
VAN NUYS—Ben Rudnick Tire Co. . . . STanley 3-2066
VISALIA . . . . . REdwood 4-6719

COLORADO

DENVER . . . . . KEystone 4-0175
PUEBLO . . . . . LIncoln 4-1663

CONNECTICUT

HARTFORD . . . . . JAckson 7-2121

DISTRICT OF COLUMBIA

WASHINGTON . . . . . REpublic 7-5525

FLORIDA

DAYTONA BEACH . . . . . CLinton 3-6505
FT. LAUDERDALE . . . . . JAckson 4-6662
JACKSONVILLE . . . . . ELgin 4-2801
LAKELAND . . . . . MUtual 2-0331
MIAMI . . . . . NEwton 3-8635
OCALA . . . . . MArion 2-4254
ORLANDO . . . . . GArden 2-3161
PENSACOLA . . . . . HEmlock 6-3161
ST. PETERSBURG 7-1197
TAMPA 8-0181
WEST PALM BEACH . . . . . TEmple 2-4181
WINTER HAVEN . . . . . CYpress 3-4325

GEORGIA

ALBANY . . . . . HEmlock 2-6481
ATLANTA—Edwards-Warren Tire Co. . MUrray 8-6447
ATLANTA . . . . . JAckson 2-5035
AUGUSTA—Bowen Bros. Hardware Co., Inc. . . 4-5561
COLUMBUS . . . . . FAirfax 2-3581
DALTON . . . . . BRoadway 8-2223
MACON . . . . . SHerwood 3-4456
ROME 2-2648
SAVANNAH . . . . . ADams 6-0631

IDAHO

POCATELLO—Construction Tire Service CEdar 2-5121

ILLINOIS

ALTON 3-7754
AURORA . . . . . AUrora 7-1116
BLUE ISLAND . . . . . FUlton 8-5200
CAIRO . . . . . MAin 88
CENTRALIA 8688
CHAMPAIGN . . . . . FLeetwood 2-5121
CHICAGO HEIGHTS . . . . . SKyline 5-2532
DECATUR 8258
DU QUOIN—DuQuoin Tire Mart . . . LInden 2-2124
FOREST PARK . . . . . FOrest 6-5100
JACKSONVILLE . . . . . CHestnut 5-6194
JOLIET 6-5481
MARION—Bowman Tire Mart . . . WYandotte 3-2671
MATTOON—Mack's Tire Service . . . ADams 5641
MOUNT VERNON—Ranmar's Standard Tire Co. . . 80
OLNEY . . . . . EXpress 3-2137
PEORIA 4-4181
QUINCY . . . . . BAldwin 2-4800
ROCKFORD 2-6619
ROCK ISLAND 8-6374
SPRINGFIELD 3-3613
VANDALIA 638
WAUKEGAN . . . . . DEla 6-7733

INDIANA

EVANSVILLE . . . . . HArrison 5-2408
FT. WAYNE . . . . . ANthony 9166
GARY . . . . . TUrner 5-7438
HAMMOND . . . . . WEstmore 2-5100
INDIANAPOLIS . . . . . MElrose 5-3407
PERU . . . . . GRidley 2-2191
RICHMOND 2-2396
SOUTH BEND . . . . . CEntral 4-1144
VINCENNES 616

IOWA

CEDAR RAPIDS . . . . . EMpire 4-5165
DAVENPORT 2-2585
DES MOINES . . . . . CHerry 4-7278
FT. DODGE 7-2761
WATERLOO . . . . . ADams 4-4640

KANSAS

HUTCHINSON . . . . . MOhawk 2-0281
KANSAS CITY . . . . . MAyfair 1-2205
KANSAS CITY—Missouri Valley Tire Co. MAyfair 1-6515
LEAVENWORTH . . . . . MUtual 2-2091
SALINA . . . . . TAylor 3-2271
WICHITA . . . . . FOrest 3-1254

KENTUCKY

LEXINGTON 2-6877
LOUISVILLE . . . . . JUniper 5-4141
PADUCAH 5-5454

LOUISIANA

ALEXANDRIA 9514
BATON ROUGE . . . . . DIckens 2-6095
BOGALUSA . . . . . REpublic 2-4264
GRETNA . . . . . FOrest 6-4371
LAFAYETTE . . . . . CEnter 4-0308
LAKE CHARLES . . . . . HEmlock 5-0547
MONROE . . . . . FAirfax 3-6328
NEW ORLEANS . . . . . JAckson 2-0191
SHREVEPORT 2-3174

MARYLAND

BALTIMORE . . . . . BElmont 5-8054
CUMBERLAND . . . . . PArkview 2-3177
HAGERSTOWN . . . . . REgent 9-4760

MASSACHUSETTS

BOSTON—Merchants Distributors, Inc. . . . CO 7-9300
BROCKTON . . . . . JU 3-0100
NORTH CAMBRIDGE . . . . . UN 6-4064
SPRINGFIELD . . . . . RE 3-6666

MICHIGAN

DEARBORN . . . . . LUzon 1-4900
DETROIT . . . . . FOrest 6-4000
ESCANABA . . . . . STate 6-7763
FLINT . . . . . CEdar 2-0189
GRAND RAPIDS . . . . . GLendale 8-3444
JACKSON . . . . . STate 8-6136
KALAMAZOO . . . . . Firestone 3-2544
LANSING . . . . . IVanhoe 2-0621
PONTIAC . . . . . FEderal 2-0121
SAGINAW . . . . . PLeasant 2-4101

MINNESOTA

DULUTH . . . . . RAndolph 2-6747
MINNEAPOLIS . . . . . FEderal 9-1183
ST. PAUL . . . . . CApitol 2-3617
ST. PAUL . . . . . MIdway 5-3961

MISSISSIPPI

BILOXI . . . . . IDlewood 6-0151
COLUMBUS . . . . . FAirfax 8-7150
GREENWOOD 70
GULFPORT . . . . . UNiversity 4-2872
HATTIESBURG . . . . . JUniper 6-6474
JACKSON . . . . . FLeetwood 4-1512
LAUREL 4375
MERIDIAN 2-3128
NATCHEZ 2-1651
PASCAGOULA . . . . . SOuth 2-4255
VICKSBURG 863
YAZOO CITY 2104

MISSOURI

HANNIBAL . . . . . 137 & 138
JOPLIN . . . . . MAyfair 4-6141
KANSAS CITY . . . . . VAlentine 1-4777
MEXICO . . . . . JUlice 1-3040
POPLAR BLUFF—J. A. Parker Tire Co. . SUnset 5-2838
ST. CHARLES . . . . . RAndolph 4-1648
ST. LOUIS . . . . . FOrest 7-8300
SPRINGFIELD . . . . . UNiversity 4-2561

NEBRASKA

LINCOLN 2-4497
OMAHA . . . . . MArket 0460
OMAHA . . . . . JAckson 4024

NEVADA

WELLS—4-Way Service . . . . . SKyline 2-1734

NEW JERSEY

BRIDGETON 9-7191
CAMDEN . . . . . WOodlawn 4-3191
ELIZABETH . . . . . ELizabeth 2-4668

NEW MEXICO

ALBUQUERQUE . . . . . CHapel 3-5587

MORE

PULL TO TEAR OUT

Operating conditions

The most important factor in operating conditions is the haul road. Proper planning of the road and work areas to prevent excessive braking and turning will save valuable time and cut tire costs.

Road maintenance

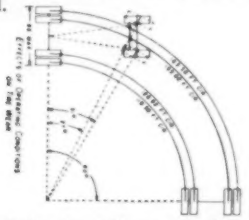
The road bed should be built and maintained free of severe depressions or chuck holes. Constant maintenance with a bulldozer or road grader will pay big dividends in reduced tire and equipment expense.

Tire clearance

Be sure tires do not rub against the body of the vehicle. Check regularly to avoid tire damage caused by loose or broken springs.

Water

Wet rubber cuts three to four times as easily as dry rubber. Eliminate water by ditching or pumping in areas where rubber-tired equipment is used.



The outside dual tire on a sharp curve travels considerably farther than the inside tire. It scrapes this extra distance.

Rely on expert on-the-job tire service to cut operating costs!

B.F.Goodrich Servicemobiles are equipped with hydraulic cranes, pneumatic wrenches, bead jacks and all the latest tools for on-the-job tire service—no matter how big the tire, how intricate the equipment, how complicated the job! B.F.Goodrich Service Men give you fast, expert service. Result: you save on downtime, eliminate unnecessary delays, reduce operating costs.

Tree stumps, boulders and other obstacles should be cleared from the haul road and working areas.

Be sure tire clearance is satisfactory at all times. Check for loose or broken springs which might damage tires.

5 no-obligation B. F. Goodrich services

Your B. F. Goodrich Tire Service Man will:

1. Inspect all your tires.
2. Point out tires that should be repaired or replaced.
3. Select tires for retreading by factory-tested and proved B.F.Goodrich methods.
4. Set up a proper inflation program.
5. Start you on a program of regular rotation and inspection.

Call the B.F.Goodrich store or dealer nearest you for all your tire and service needs

The B.F.Goodrich stores and dealers listed below are prepared to cut your operating costs and increase tire life with expert, on-the-job tire service. For a more complete listing in your area, consult the Yellow Pages of your phone book.

ALABAMA

ANNISTON . . . . . ADams 5-2571
BIRMINGHAM . . . . . FAirfax 2-0381
GADSDEN . . . . . LIberty 6-5271
HUNTSVILLE . . . . . JEFferson 6-2487
MOBILE . . . . . HEmlock 2-2681
MONTGOMERY . . . . . AMherst 2-1561
TUSCALOOSA . . . . . PLaza 2-8312

ARIZONA

PHOENIX . . . . . ALpine 3-6168
TUCSON—Baum & Adamson . . . . . MAin 3-1981

ARKANSAS

BLYTHEVILLE . . . . . POplar 3-8816
CAMDEN . . . . . TEmple 6-8334
FORT SMITH . . . . . SUnset 3-4124
LITTLE ROCK . . . . . FRanklin 4-5068
MALVERN 488
PINE BLUFF . . . . . JEFferson 4-5123

CALIFORNIA

BAKERSFIELD . . . . . FAirview 4-4701
BELL GARDENS—Gardner Tire Sales . SPruce 3-2811
EUREKA . . . . . HIllside 2-5700
FRESNO . . . . . ADams 3-5216
LOS ANGELES . . . . . Richmond 8-4171
MODESTO . . . . . LAmbert 2-1005
OAKLAND . . . . . Highgate 4-2800
REDWOOD CITY . . . . . EMerson 8-4548
RICHMOND . . . . . BEkin 4-7271
SACRAMENTO . . . . . GIlbert 2-3811
SAN BERNARDINO . . . . . TUrner 6-0947
SAN DIEGO . . . . . BElmont 2-3131
SAN FRANCISCO—Perry & Whitelaw, Inc. UNderhill 1-1801
SAN JOSE . . . . . CYpress 5-6050
SAN MATEO—Perry & Whitelaw, Inc. . Diamond 2-2051
STOCKTON . . . . . HOward 6-9681
VAN NUYS—Ben Rudnick Tire Co. . . STanley 3-2066
VISALIA . . . . . REdwood 4-6719

COLORADO

DENVER . . . . . KEystone 4-0175
PUEBLO . . . . . LIncoln 4-1663

CONNECTICUT

HARTFORD . . . . . JAckson 7-2121

DISTRICT OF COLUMBIA

WASHINGTON . . . . . REpublic 7-5525

FLORIDA

DAYTONA BEACH . . . . . CLinton 3-6505
FT. LAUDERDALE . . . . . JAckson 4-6662
JACKSONVILLE . . . . . ELgin 4-2801
LAKELAND . . . . . MUtual 2-0331
MIAMI . . . . . NEwton 3-8635
OCALA . . . . . MArion 2-4254
ORLANDO . . . . . GArden 2-3161
PENSACOLA . . . . . HEmlock 8-3161
ST. PETERSBURG 7-1197
TAMPA 8-3181
WEST PALM BEACH . . . . . TEmple 2-4181
WINTER HAVEN . . . . . CYpress 3-8325

GEORGIA

ALBANY . . . . . HEmlock 2-6481
ATLANTA—Edwards-Warren Tire Co. . MUrray 8-6447
ATLANTA . . . . . JAckson 2-5035
AUGUSTA—Bowen Bros. Hardware Co., Inc. . 4-5561
COLUMBUS . . . . . FAirfax 2-3581
DALTON . . . . . BRoadway 8-2223
MACON . . . . . SHerwood 3-4456
ROME 2-2840
SAVANNAH . . . . . ADams 6-8631

IDAHO

POCATELLO—Construction Tire Service . CEdar 2-5121

ILLINOIS

ALTON 3-7764
AURORA . . . . . AUrora 7-1116
BLUE ISLAND . . . . . FUlton 8-5300
CAIRO . . . . . MAin 88
CENTRALIA 5609
CHAMPAIGN . . . . . FLeetwood 2-5121
CHICAGO HEIGHTS . . . . . SKyline 5-2532
DECATUR 5258
DUQUOIN—DuQuoin Tire Mart . . . Linden 2-2124
FOREST PARK . . . . . FOrest 6-5100
JACKSONVILLE . . . . . CHestnut 5-6194
JOLIET 5-5481
MARION—Bowman Tire Mart . . . WYandotte 3-2671
MATTOON—Mack's Tire Service . . . ADams 5641
MOUNT VERNON—Ranmar's Standard Tire Co. . . 60
OLNEY . . . . . EXpress 3-2137
PEORIA 4-4181
QUINCY . . . . . BAldwin 2-4800
ROCKFORD 2-4619
ROCK ISLAND 8-6374
SPRINGFIELD 3-3813
VANDALIA 638
WAUKEGAN . . . . . DEla 6-7733

INDIANA

EVANSVILLE . . . . . HArrison 5-2408
FT. WAYNE . . . . . ANthony 9166
GARY . . . . . TUrner 5-7438
HAMMOND . . . . . WEstmore 2-5100
INDIANAPOLIS . . . . . MElrose 5-3407
PERU . . . . . GRidley 2-2191
RICHMOND 2-2395
SOUTH BEND . . . . . CEntral 4-1164
VINCENNES 618

IOWA

CEDAR RAPIDS . . . . . EMpire 4-5165
DAVENPORT 2-2885
DES MOINES . . . . . CHerry 4-7279
FT. DODGE 7-2761
WATERLOO . . . . . ADams 4-4040

KANSAS

HUTCHINSON . . . . . MOhawk 2-0281
KANSAS CITY . . . . . MAyfair 1-2205
KANSAS CITY—Missouri Valley Tire Co. MAyfair 1-8515
LEAVENWORTH . . . . . MUtual 2-2091
SALINA . . . . . TAylor 3-2271
WICHITA . . . . . FOrest 3-1254

KENTUCKY

LEXINGTON 2-8877
LOUISVILLE . . . . . JUniper 5-4141
PADUCAH 5-5454

LOUISIANA

ALEXANDRIA 9314
BATON ROUGE . . . . . DIckens 2-6895
BOGALUSA . . . . . REpublic 2-4254
GRETNA . . . . . FOrest 6-4371
LAFAYETTE . . . . . CEntar 4-8308
LAKE CHARLES . . . . . HEmlock 6-0647
MONROE . . . . . FAirfax 3-0308
NEW ORLEANS . . . . . JAckson 2-0191
SHREVEPORT 2-3174

MARYLAND

BALTIMORE . . . . . BElmont 5-8054
CUMBERLAND . . . . . PArkview 2-3177
HAGERSTOWN . . . . . REgent 9-4780

MASSACHUSETTS

BOSTON—Marchants Distributors, Inc. . . . CO 7-8200
BROCKTON . . . . . JU 3-0100
NORTH CAMBRIDGE . . . . . UN 4-4634
SPRINGFIELD . . . . . RE 1-6688

MICHIGAN

DEARBORN . . . . . LIton 1-8900
DETROIT . . . . . FOrest 6-4900
ESCANABA . . . . . STate 6-7783
FLINT . . . . . CEdar 2-6188
GRAND RAPIDS . . . . . GLendale 9-3444
JACKSON . . . . . STate 9-8136
KALAMAZOO . . . . . Firestone 3-2544
LANSING . . . . . IVanhoe 2-0821
PONTIAC . . . . . FEderal 2-0121
SAGINAW . . . . . PLeasant 2-4101

MINNESOTA

DULUTH . . . . . RAndolph 2-6747
MINNEAPOLIS . . . . . FEderal 5-1195
ST. PAUL . . . . . CApitol 2-3617
ST. PAUL . . . . . Midway 5-3961

MISSISSIPPI

BILOXI . . . . . IDlewood 6-8151
COLUMBUS . . . . . FAirfax 8-7150
GREENWOOD 70
GULFPORT . . . . . UNiversity 4-2872
HATTIESBURG . . . . . JUniper 4-6474
JACKSON . . . . . FLeetwood 4-1512
LAUREL 4375
MERIDIAN 2-3128
NATCHEZ 2-1651
PASCAGOULA . . . . . SOuth 2-4255
VICKSBURG 563
YAZOO CITY 2184

MISSOURI

HANNIBAL . . . . . 137 & 138
JOPLIN . . . . . MAyfair 4-4141
KANSAS CITY . . . . . VAlentine 1-4777
MEXICO . . . . . JUstice 5-3040
POPLAR BLUFF—J. A. Parker Tire Co. . SUnset 5-2838
ST. CHARLES . . . . . RAndolph 4-3548
ST. LOUIS . . . . . FOrest 7-6300
SPRINGFIELD . . . . . UNiversity 4-2561

NEBRASKA

LINCOLN 2-6497
OMAHA . . . . . MArket 0460
OMAHA . . . . . JAckson 4024

NEVADA

WELLS—4-Way Service . . . . . SKyline 2-3734

NEW JERSEY

BRIDGETON 9-7191
CAMDEN . . . . . WOodlawn 4-3191
ELIZABETH . . . . . ELizabeth 2-6688

NEW MEXICO

ALBUQUERQUE . . . . . CHappel 3-5567

PULL TO TEAR OUT

MORE

Expert B.F.Goodrich on-the-job service is as close as your phone

NEW YORK

ALBANY	ALbany 4-5115
BUFFALO	GRant 4040
EDEN—Vic Schrader Tire Service	EMerson 6009
NEW YORK	JUdson 2-1030
NIAGARA FALLS	BUtler 5-1275
OLEAN	2-1232
POUGHKEEPSIE	GLobe 2-0630
ROCHESTER	GLenwood 3-2838
SYRACUSE	GRanite 6-4016
UTICA	REdwood 3-7536

NORTH CAROLINA

ASHEVILLE	ALpine 3-2726
CHARLOTTE	EDison 3-4133
GREENSBORO	BRoadway 2-3197
RALEIGH	TEmple 3-3631
WINSTON-SALEM	PArk 2-4119

NORTH DAKOTA

FARGO	ADams 2-7481

OHIO

CINCINNATI	CHerry 1-4050
CLEVELAND	PRospect 1-3500
COLUMBUS	CApitol 1-8861
DAYTON	BAldwin 3-9181
ELYRIA	FAirfax 2-3711
MANSFIELD	LAfayette 4-5141
MARIETTA	FRontier 3-2096
STEUBENVILLE	ATlantic 2-2705
TOLEDO	CHerry 3-1250
WOOSTER—Struck Tire Company	HOward 2-0606

OKLAHOMA

ENID	ADams 4-5121
OKLAHOMA CITY	FOrest 5-1347
OKLAHOMA CITY—Johnnie's Tire Co., Ltd.	JAckson 8-8404
TULSA	LIttler 5-1221
TULSA—Tom P. McDermott	DIamond 3-9188

OREGON

EUGENE	DIamond 5-6141
PORTLAND	BEImont 6-2106
PORTLAND—Mel Goodin Recap Plant	ATlantic 8-5541
SALEM—Russell's Tire Service	EMpire 2-5651

PENNSYLVANIA

ALLENTOWN	HEmlock 3-3249
ALTOONA	WIndsor 4-9345
BETHLEHEM	UNiversity 7-4184
BUTLER	4-3310
ERIE	3-3205
GREENSBURG	3767
HARRISBURG	CEdar 4-6296
HAZELTON—Schultz's	GLadstone 4-2481
JOHNSTOWN—McNally Tire & Rubber	7-8343
LANCASTER	EXpress 2-2196
PHILADELPHIA	Pioneer 3-1134
PITTSBURGH	MUseum 2-8310
POTTSTOWN	FAculty 3-6410
READING	FRanklin 4-2274
TURTLE CREEK	ELectric 1-3077
WASHINGTON	BAldwin 5-6650
WILKES-BARRE—Economy Gas & Oil Co.	VAlley 3-0188
YORK—L. J. Allen Co.	5726

RHODE ISLAND

PROVIDENCE	DE 1-6660

SOUTH CAROLINA

CHARLESTON	RAymond 2-6391
COLUMBIA	4-9135

TENNESSEE

BRISTOL	SOuth 4-3147
CHATTANOOGA	AMherst 7-1176
CLEVELAND	GReenwood 6-4573
DYERSBURG	ATwater 5-4620
JACKSON	7-8541
KINGSPORT	CIrcle 2-8191
KNOXVILLE—Tinsley Tire Co.	5-0286
MEMPHIS	JAckson 5-8477
MORRISTOWN	JUniper 6-8311
NASHVILLE	ALpine 5-6393

TEXAS

ABILENE—Abilene Truck Terminal	ORchard 4-9273
ALICE	MOhawk 4-4211
AMARILLO	DRake 4-5321
AUSTIN	GReenwood 6-8156
BAY CITY	CIrcle 5-5329
BAYTOWN	JUstin 2-8254
BROWNSVILLE	LIncoln 2-3471
BRYAN—Brazos Tire Co.	TAylor 3-3078
CORPUS CHRISTI	TUlip 4-8941
DALLAS	RIverside 1-1201
EL PASO	KEystone 2-2478
FORT WORTH	EDison 2-9188
GALVESTON	SOuthfield 5-8378
HARLINGEN	GArfield 3-0330
HOUSTON	Capitol 7-0141
LUBBOCK	POrter 5-5788
LUFKIN	NEptune 4-7736
MARSHALL—Manly's	WEbster 5-6776
McALLEN	MUrray 6-8354
ODESSA—Odessa Tire & Supply Co.	FEderal 7-8378
ORANGE	TUxedo 3-9321
PASADENA	GReenwood 2-3611
PORT ARTHUR	YUkon 3-4567
SAN ANTONIO	CApitol 7-7278
TYLER	LYric 4-6305
VICTORIA	HIllcrest 3-6341
WESLACO	WOodlawn 8-2822
WICHITA FALLS	322-1122

VERMONT

BURLINGTON	UNiversity 2-3901

VIRGINIA

FRONT ROYAL—Board Tire & Battery Co.	277
HARRISONBURG	4-4445
NEWPORT NEWS	6-1329
NORFOLK	MAdison 2-3287
PORTSMOUTH	EXport 7-2277
RICHMOND	ELgin 5-3286
ROANOKE	4-3241
ST. PAUL—Tri-County Tire Service	RO 2-5301
WINCHESTER	MOhawk 2-0381

WASHINGTON

GRANDVIEW—Bill M. Vance	TUcker 2-6255
SEATTLE	MAin 3-6696
SPOKANE	MAin 4-5271
TACOMA	MAin 7-9173

WEST VIRGINIA

BLUEFIELD—Bluefield Ret. & Vulc.	DA 5-5123
CHARLESTON	Dickens 6-0431
CLARKSBURG	MAin 4-7681
MORGANTOWN—Bob Dinsmore Tire Service	3168
PARKERSBURG	GArfield 2-6576
WHEELING	CEdar 2-8660

WISCONSIN

LA CROSSE	4-5065
MADISON	ALpine 5-4592
MILWAUKEE	DIvision 4-6288

Enter the B.F.Goodrich Truck Tire Mileage Contest. You can win a Thunderbird, or Corvette, or one of 310 other prizes. See your B.F.Goodrich dealer today for entry blanks.

Specify B.F.Goodrich tubeless or tube-type tires when ordering new equipment.

For additional copies of this advertisement, see your B.F.Goodrich dealer or write *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

B.F.Goodrich *truck tires*

© The B.F. Goodrich Company

INDUSTRY NEWS

(Continued from page 32)

Cement overcapacity worries Marquette

EXCESS CEMENT producing capacity of nearly 65 million bbl. will plague the industry in 1962, Marquette's president W. A. Wecker warns in the firm's 1958 annual report. Even accepting the "most optimistic" gains in cement use by 1962, he sees this great amount of overcapacity looming, the "equivalent of 26 idle cement plants of average size." His calculations:

Capacity of U.S. Plants

	millions of barrels
Start of 1955	302.3
Additions thru 1958	106.9
Now being built	13.8
After all additions	423.0

Total U.S. Cement Use

In 1955	292.8
Gain thru 1958	9.3
Gain 1958-62 (20%)	57.9
Max. total in 1962	360.0
Indicated excess cap.	63.0

Cement shipments shoot up 19 percent through February

MILL SHIPMENTS of portland cement jumped a sizable 19 percent through the first two months of this year over the comparable 1958 months, the Bureau of Mines reports.

Most of the gain came in February, when shipments were up 36 percent over last year to 14,785,000 bbl. Biggest gains for the two months were in the southeast and the plains states. Both areas reported gains of more than 40 percent over the two-month period in 1958. Shipments totalled 29,201,000 bbl. for the year's first two months.

Government statistics booklet published

HOW DO I FIND the market statistics needed in my business? For those confronted with this question, the booklet, "Practical Use of Government Statistics," gives some of the answers. Published by the Small Business Administration, the 32-page booklet tells what statistics are available from the federal government, which has "the greatest collection of statistical information in the world." The U. S. Government Printing Office, Washington 25, D.C., sells the booklet for 20 cents.

(Continued on page 44)

ANOTHER FLEXCO SPLICE DOING A DEPENDABLE JOB AT *MATERIAL SERVICE CORP.*

Picture courtesy of Material Service Corp., Yard #15, Lockport, Ill.

Cutaway of a Flexco application showing compression plates, teeth and precision-made bolts and nuts.

Belt maintenance crews like to work with Flexco fasteners because they are easy to apply — joints last a long time — worn plates can be replaced quickly — ideal for repairing rips and tears.

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS WITH FLEXCO . . . The quality fastener for all heavy-duty conveyor belt applications: SAND & GRAVEL, CRUSHED ROCK, COAL & METALS, CONSTRUCTION EQUIPMENT, etc.

Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

NEW "25-PAK"

"25-PAK" contains enough fasteners to join common belt widths.

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Flexible STEEL LACING COMPANY

4684 LEXINGTON STREET • CHICAGO 44, ILLINOIS

Enter 1033 on Reader Card

GENERAL REFRACTORIES

FOR EXTREME BURNING ZONE CONDITIONS

The unique construction of GREFCO'S STEELKLAD-EE, with steel plates embedded in the brick, gives this refractory superior resistance to extremely severe burning zone conditions. All STEELKLAD liners offer these important advantages:

STEELKLAD-EE

STEELKLAD

1. Lower thermal conductivity than burned brick.

2. Greatly increased resistance to thermal and mechanical spalling.

3. Cold face notch for positive taper identification.

4. Steel plates in radial joints.

5. Superior composition enables brick to take on and hold protective coating essential to long life.

6. Built-in expansion allowance (cardboard expansion strips attached).

FOR NORMAL BURNING ZONE

Grefco's ARCO-70 high alumina kiln liners for lining entire burning zone or for use in conjunction with STEELKLAD kiln liners in severe burning zone service. Available in all standard sizes and shapes.

ARCO-70 (70% Alumina)

GREFCO ROTARY KILN LINERS

FOR OTHER KILN ZONES

Where less service stresses exist, the following quality Grefco products will meet individual requirements.

HIAC A super duty brick for Calcining and Intermediate Zones. Gives greater thermal spall resistance and higher volume stability than that offered by a high duty brick.

SUPERAC A high fired super duty, spall resistant brick of high density and low porosity. For service in Discharge Nose Rings, Dams and Cooling Zones.

SPECIAL HR A dense, strong and hard burned refractory brick made especially for service in Kiln Chain Sections, Rotary Coolers and Stone Dryers, where abrasion is a problem.

HIGH DUTY GREFCO offers numerous high duty brands, available from all producing districts with specific properties for use in cold and intermediate zones, kiln hoods, and coolers.

Grefco Technical and Sales Service Personnel will be glad to discuss with you the refractories best suited to your particular needs.

GENERAL REFRACTORIES COMPANY

PHILADELPHIA 2, PA.

A COMPLETE REFRACTORIES SERVICE

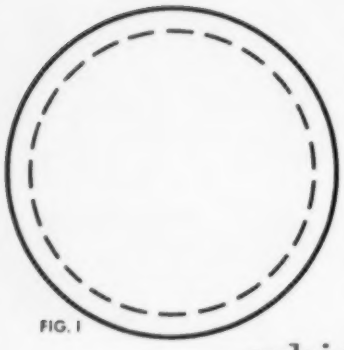


FIG. 1

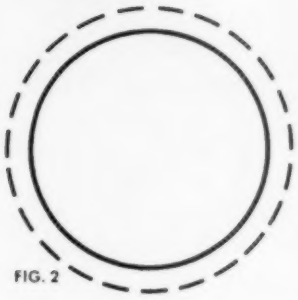


FIG. 2

which dotted circle is the larger?

Your eyes tell you that the dotted circle in figure 1 is greater in diameter than figure 2. Actually, the figures are of equal diameter.

Many of us are fooled by an illusion of another sort; the illusion that all crusher replacement parts are of equal value. This illusion can lead to one of the most costly investments one can make.

You can prove this to yourself by ordering Columbia Armor-Tough Manganese Steel replacement parts. Then COMPARE the cost of down time, the cost per ton, the cost per week of service. No matter how you measure it, you will find that Columbia crusher components are your best investment . . . because Columbia parts are "beefed up" where it counts, where rock meets metal.

Don't be fooled by the value illusion. Insist on the savings that only extra Columbia quality can assure you.

Send for the new illustrated Columbia Bulletin No. 1063, featuring crusher, tractor, shovel, bucket replacement parts.

CRUSHER JAW
SMOOTH ROLL SHELL
7 FT. BOWL LINER
Columbia
COLUMBIA STEEL CASTING CO., Inc.
933 N. W. Johnson, Portland 9, Ore. • Ph.: CA 7-0555

Enter 1022 on Reader Card

INDUSTRY NEWS

(Continued from page 41)

Big asbestos project planned for Newfoundland

ADVOCATE MINES LTD., Toronto, is reportedly planning a $20-million project at Baie Verte, Newfoundland, Canada, which would produce 3,000-tpd. of asbestos by 1962. If plans materialize, *The Financial Post* reports, the plant may have a significant advantage over other Canadian producers because of its nearness to the big European markets.

Advocate's deposits are reported to include about 22 million tons grading $10.25 a ton or more, or up to 31 million tons of $7.02-per-ton material suitable for an open-pit operation.

Canadian Johns-Manville, Patino of Canada, Amet Corp. and Financiere Belge de l'Asbeste-Ciment have an agreement to look over the deposit. If they like it, the financing firm will provide up to $17.9 million for a 2,500 to 3,000-ton mill. CJM, Amet and Financiere have agreed, if production is reached, to buy 25,000 tons of fiber annually for 10 years.

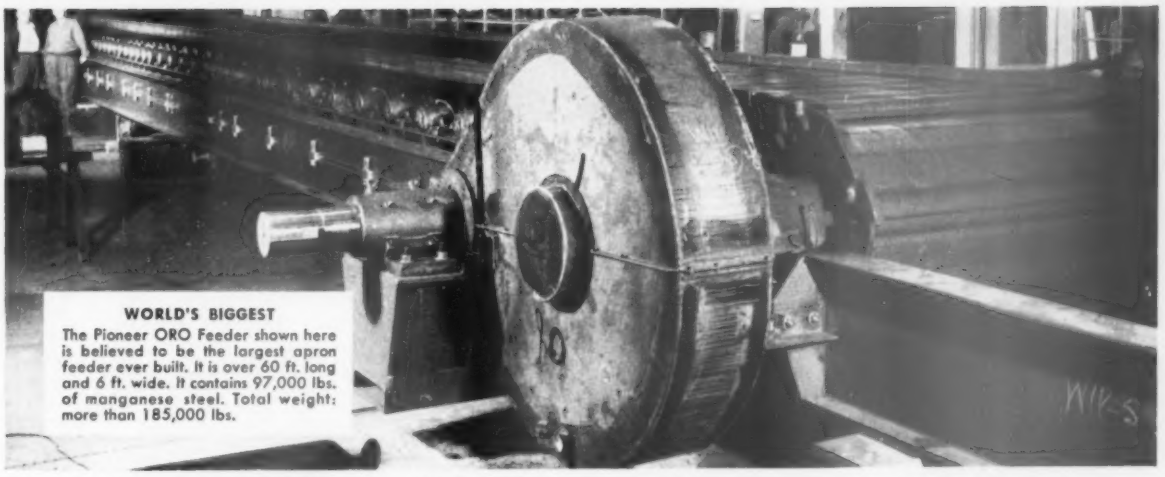
Canada produces about two-thirds of the world's asbestos supply. While the outlook for coming years is good, only 910,000 tons worth $90 million were produced in Canada last year, a drop of about 10 percent from 1957. Some of the decrease was ascribed to the recession here. But growing production in South Africa and Russia was also thought to be responsible, *Engineering and Mining Journal* reported. Finally, stockpiling by fiber users late in 1957, in anticipation of price boosts, was thought to be another factor in the 1958 drop in sales.

U. S. asked to rule on cement imports

AT LEAST A DOZEN STATES are considering laws prohibiting foreign goods —mainly cement and steel—in federal-aid roadbuilding projects. *Business Week* magazine reports that the Commerce Department is inclined to let each state decide for itself whether it will ban imported materials. But the State Department is vigorously opposing the idea, noting that the recent "Buy American" law, which gives U. S. firms a price advantage on bids for heavy electrical and other equipment, makes other nations indignant.

Pressure for a ban comes as a result of contractors' bids on the road projects, which propose using materials from Japan, Belgium and West Germany. The White House was expected to decide the matter.

(Continued on page 49)



WORLD'S BIGGEST

The Pioneer ORO Feeder shown here is believed to be the largest apron feeder ever built. It is over 60 ft. long and 6 ft. wide. It contains 97,000 lbs. of manganese steel. Total weight: more than 185,000 lbs.

For men who like to underbid their competitors... *(and make a nice profit, too)*

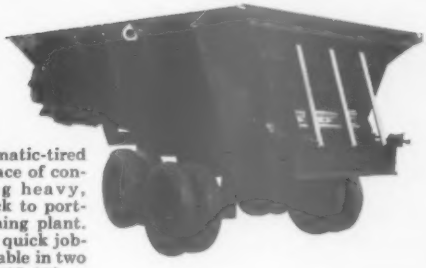
Pioneer® Feeders

APRON FEEDERS

Heavy duty PIONEER Apron Feeders have ½"-thick overlapping forged steel pans carried on heavy chains which in turn are supported on wide heavy-duty idlers. Available with or without straight or flared sideboards as well as receiving hopper. Upturned, interlocking flanges at ends of pans help make Feeder practically leak-proof and spill-proof. Available in widths of 30", 36", 42", and 48"; lengths of 4', 6', 8', 10', 12', and more.

ORO FEEDERS

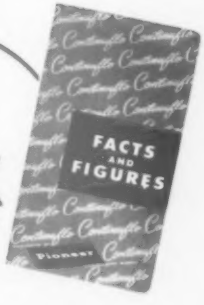
(See illustration at top of page) The most rugged Feeder made. Pans, rollers, drive sprockets, and tail idlers are all cast from special high manganese content alloyed steel. Pans are from 9/16" to 1" or more thick, depending on width of Feeder. Chain links are cast as part of pan so there are no bolts or rivets to break or loosen. Available in 30", 36", 42", 48", 60", 72", and 84" widths.

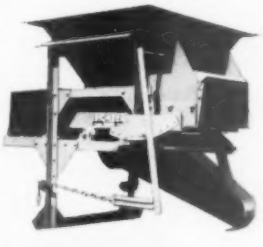


PORTABLE APRON FEEDERS

Mounted on pneumatic-tired chassis. Used in place of conveyor for feeding heavy, sharp, abrasive rock to portable primary crushing plant. Easily detached for quick job-to-job moves. Available in two sizes: 36"x30' and 42"x30'.

Free Handbook





MECHANICAL FEEDERS

PIONEER Reciprocating Plate Feeders are particularly well adapted to feeding gravel. May be used with shovel, dragline, clam-shell, or dozer to provide uniform flow of material to conveyors. Four different speeds built in. May be equipped with grate-bar grizzly, extended hopper, extension legs, or with wheels for greater portability. Models for every application.

For your free copy of *Facts And Figures* (the most complete and comprehensive handbook for the aggregates-producing industry), write to PIONEER ENGINEERING, Minneapolis 14, Minnesota, or contact your Pioneer Distributor . . . *today!*

Pioneer®
ENGINEERING
DIVISION OF POOR & COMPANY, INC.

Enter 1124 on Reader Card

One P&H sells another because

P&H "PROFIT-TONS" reduce loading costs all day... every day

Up to 30% higher bail pull for more uniform dipper speed in the pile—faster swing—greater job availability all add up to as much as 10% more production, lower loading cost per ton and *more net profit* for owners of P&H Electric Mining Excavators.

P&H "Profit-Tons" are the end product of these *exclusive* P&H design principles:

MAGNETORQUE® . . . the most productive digging motion drive known for electric excavators. This *patented* P&H drive electro-magnetically transmits full digging power from an A.C. hoist motor direct to the dipper without motor-generator set conversion to D.C. current. It gives higher bail pull, better dipper fill factor and automatic impact protection to the digging machinery.

ELECTRONIC CONTROL . . . the most responsive control for electric excavators. This *patented* P&H control accomplishes the quickest work motion reaction time and gives the greatest cycle productivity known.

With P&H—and only with P&H—do you get the service assurance of single source responsibility. P&H manufactures their own electrical as well as mechanical components *—designed specifically for electric excavator service.* Write Dept. 547A, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

P&H LINE:
Electric Excavators: 3½ through 10 yds.
Power Excavators: ½ through 3½ yds.
Truck Cranes: 10 through 70 tons

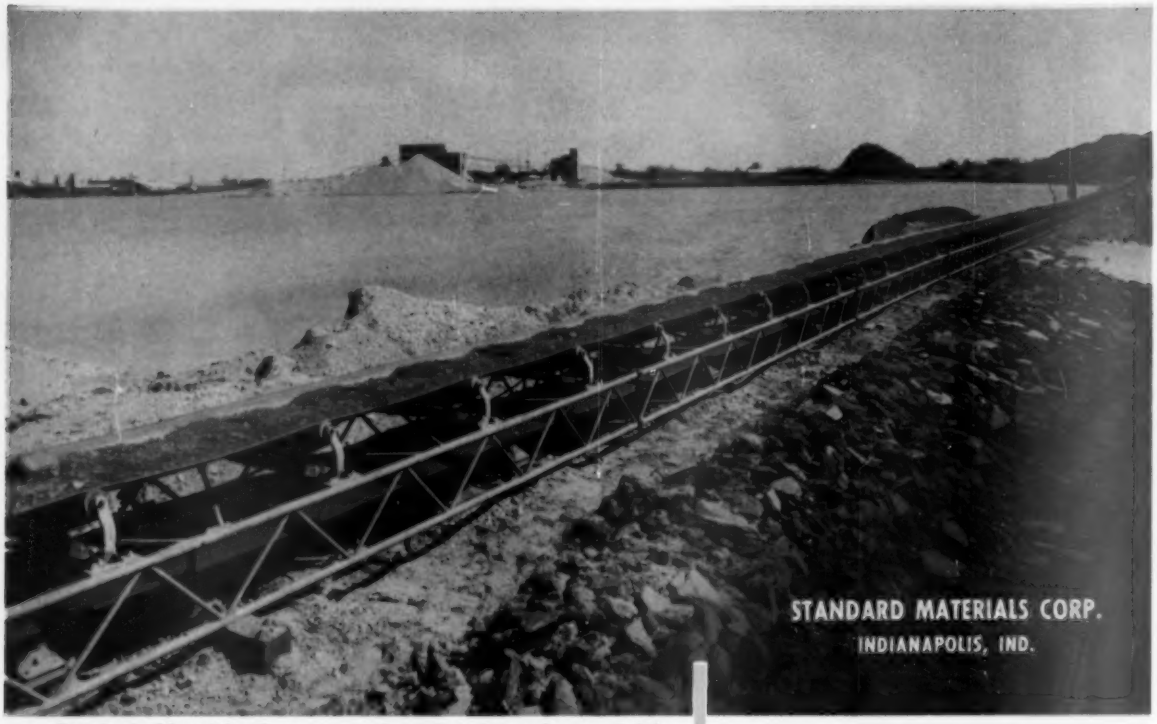
OUR 75TH YEAR

P&H MINING EXCAVATORS

HARNISCHFEGER CORPORATION
Construction & Mining Division
Milwaukee 46, Wisconsin

P&H ELECTRIC SHOVEL LINE: 3½ through 10 cu. yd. capacities

Illustrated is a 4½ cubic yard P&H Model 1400 Mining Excavator owned by Lake Ontario Portland Cement Co., Ltd., Picton, Ontario, Canada. It is shown quarrying hard, dense limestone for crusher at their new $16 million aggregate and cement plant.



Standard Materials Corporation's new Indianapolis plant uses MARCO field conveyors exclusively. The 30" conveyor system transports 400 to 450 tph of sand and gravel around lake to plant site.

Conveyor units range in length from 500 to 800 ft.

A foot or a mile...

MARCO® field conveyors are your best buy

MARCO field conveyors are designed so they may be quickly assembled and later shortened, lengthened or rearranged — all without cutting or welding.

The greater rigidity of MARCO's *tubular frame* construction eliminates the expense of conveyor supports or foundations. These stronger frames resist misalignment and increase belt life.

Production is increased because MARCO field conveyors provide a continuous feed to plant machinery, — yet your investment and operating costs are lower. There are no haul trucks to buy or operate . . . no haul roads to build or maintain.

Specify MARCO on your next installation — large or small. The proven economies of MARCO field conveyors will increase your profits.

For more information consult your MARCO Distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Mo.

EXCLUSIVE CONVEYOR FEATURES OFFER MAXIMUM PROTECTION AGAINST BELT-EDGE DAMAGE

WIDER FRAME

MARCO Tubular Frames are widest in the industry. They provide 100% more space (5½") in the critical area — between belt edge and nearest frame member. Pedestal type return idler brackets are used, instead of hanger brackets that confine and damage belt.

WIDER FACE PULLEYS

MARCO is first with modern pulley specifications. 2" between belt and pulley edge — provides 100% greater protection than outmoded standards. Reduces possibility of belt destruction caused by "belt wandering" in high tension areas.

MARCO's built-in belt protection is all the more important in field conveyor installations — since a minimum amount of time can be devoted to belt alignment.

MARCO®

engineered MARCO products:

Tubular Frame Belt Conveyors • Conveyor Idlers • Solid and Self Cleaning Steel Pulleys
Bucket Elevators • Control Gates • Feeders • Bins

Enter 1073 on Reader Card

INDUSTRY NEWS

(Continued from page 44)

Bill proposed to ease fluorspar industry woes

PERHAPS HALF of the workers in Kentucky's fluorspar industry have been laid off in the last few months as a result of the end of federal stockpiling and increasing imports. But the state's two senators, John Sherman Cooper and Thruston B. Morton, with Representative Frank Stubblefield, have introduced a bill in Congress providing for a domestic production base for the mineral. Foreign producers would be allocated the balance between domestic production and use.

Producers in Illinois, most important producing state in the industry, have been hit at least as hard. Many have closed down their operations almost completely, *Engineering and Mining Journal reports*. Southern Illinois Mining Co., Hoeb Mining Co., Hawkins Mining Co., Tamora Fluorspar Mining Co., Omar Austin's mine and mill, Conn and Joiner, Goose Creek Mining Co. and B. Burgess Mining Co. all have suspended operations. Ozark-Mahoning Mining Co. and Minerva Oil Co., Fluorspar division, have each kept one or two mines going part time.

About 485,000 tons of the ingredient in steel making and hydrofluoric acid were consumed last year. But imports plus domestic production equaled about 670,000 tons. Apparently the difference between the two amounts was stockpiled by the federal government under the Domestic Production and Purchase Act of 1956. The President recently vetoed the law, which Congress had extended after it expired in December.

Safety awards at Alpha near million mark

TOTAL BONUSES to its employes over the years for safe working are nearing the million-dollar mark, Alpha Portland Cement Co., Easton, Pa., announced recently. The 32-year-old Alpha safety program is organized so each employe gets one percent of his wage as a bonus if no accident has occured at his plant during the previous payroll period. Nearly $70,000 was paid out early this year in 1958 safety bonuses to the firm's 1,800 employes at its 9 plants. For 1958, accident frequency rate was 2.47 injuries per million man hours, as compared with 3.17 in 1957 and 3.21 in 1956. The firm claims to have the industry's lowest frequency rate. Severity rate was 162 days lost per million man hours last year. *(Continued on page 50)*

HUBER-WARCO grinders

a hearty appetite for aggregate

The Huber-Warco No. 9 GRINDER has been designed to give big volume aggregate production, with a substantial savings to the user. The No. 9 GRINDER will handle such material as cinders, pumice, haydite, slag and quarry and mine products, with a low power consumption. Capacity of this grinder is 30 yards per hour. The suspended mullers are adjustable to any height, and for finer grinding, the grinding surfaces run together. All gears are long-wearing cast material. The No. 9 GRINDER will give years of trouble-free service, with a minimum of maintenance. Huber-Warco GRINDERS range in capacity from 4 to 75 yards per hour to meet any requirement. Write for complete details.

A product of HUBER-WARCO COMPANY, Marion, Ohio, U. S. A.

HUBER-WARCO COMPANY, Marion, Ohio, U.S.A.

☐ Please send me specifications on the Huber-Warco No. 9 Grinder

Name _____

Title _____

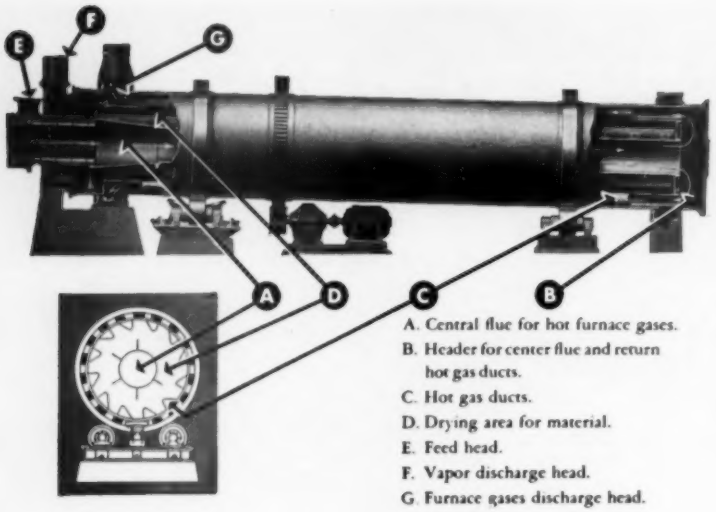
Company _____

Address _____

City _____ Zone ___ State _____

HUBER W WARCO

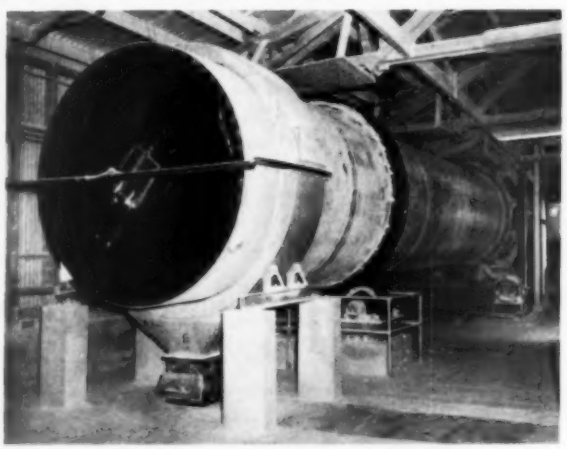
Enter 1020 on Reader Card



A. Central flue for hot furnace gases.
B. Header for center flue and return hot gas ducts.
C. Hot gas ducts.
D. Drying area for material.
E. Feed head.
F. Vapor discharge head.
G. Furnace gases discharge head.

Ruggles-Coles INDIRECT-FIRED DRYERS and HEATERS

- Dry without contamination from combustion gases, regardless of fuel.
- Minimize auxiliary dust collection when handling fine precipitates and filter cake.
- Heat pulverized materials for process work.
- Collect vapors at high concentration.
- Available fabricated with heat and corrosion-resistant metals.



104" diameter by 65' long Ruggles-Coles Indirect Dryer removing moisture from washed and filtered Kaolin clay at Gardner, Ga., plant of Mineral and Chemical Corporation of America, Edgar Division.

Write for complete specifications. Ask for Bulletin AH-438-7

HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 240 ARCH ST. • Main Office and Works

New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco • Birmingham • Jacksonville Beach

Enter 1032 on Reader Card

INDUSTRY NEWS

(Continued from page 49)

Income tax ruling affects sales offices

THE U. S. SUPREME COURT has ruled that a state is within its rights to tax income earned instate, even if the firm has only a sales office there. The ruling came in a case brought by Northwestern States Portland Cement Co., Mason City, Iowa. The firm questioned the right of Minnesota to tax sales made there, where Northwestern has only a sales office.

The court ruled that this income may be taxed. But the court said the state cannot charge Northwestern a state privilege or franchise tax, which is based on income.

Gypsum industry expands

PLANT CONSTRUCTION and acquisitions were in the gypsum industry news early this year. National Gypsum's Waukegan, Ill., plant is slated for completion next month, will produce enough wallboard, sheathing, lath and plasters to make 50,000 homes a year. Construction on National's new Lorain, Ohio, gypsum plant was to start this spring. Both will be served by the firm's big Tawas City, Mich., quarry, which recently started production.

National also reported expansion had begun at its Savannah, Ga., products plant. A 25-percent enlargement program, which will make it "the largest gypsum plant in the world," makes the installation capable of producing adequate gypsum products for 100,000 homes a year, the firm reports. Finally, if exploratory drilling now underway indicates adequate gypsum deposits, National plans a $5-million mill near Brantford, Ontario, Canada.

U. S. Gypsum opened a $20-million gypsum product plant at Galena Park, Tex. (near Houston) in February. Other USG projects for the year are a new manufacturing plant near Burlington, Iowa, and doubling of the capacity of the Hagersville, Ontario, plant.

Fibreboard Paper Products Corp., San Francisco, announced greatly increased capacity has been installed in two of its gypsum products plants in California. Capacity of the Newark (Calif.) plant will nearly be doubled in a project scheduled for completion in August. And a new plaster mill plus a 60-percent boost in gypsum board capacity were announced for the South Gate gypsum plant. Much of the raw gypsum for the enlarged plants will be supplied from the firm's new 750-million ton deposit near Apex, Nev.

(Continued on page 52)

HUDSON PULP & PAPER CORP.
MULTIWALL SACK

Guarantee

Effective ..... the Hudson Pulp & Paper Corp., 477 Madison Avenue, New York 22, New York warrants and guarantees to replace without cost in a future shipment or (at its option) to refund to the purchaser the cost of each and every Hudson Multiwall Sack which bursts, tears, splits, or otherwise fails in the course of packing and/or closing.

PULP & PAPER CORP.

Get USE from every bag you buy

Only HUDSON guarantees Multiwalls ...and puts it in writing

FIELD REPORT

TO: B.D.

Re: [redacted]'s Order

Herewith [redacted]'s carload order. Looks like beginning of good volume from this account. Their P.A. really opened up when I showed him our Written Guarantee policy. Explained to him that every Hudson bag he pays for is guaranteed to be a bag he can use. Or we pay!

He'd never known anything like this before. Please be sure to include validated Guarantee Certificate with your confirmation. Also give him full details on our Design Service. He's interested.

Hudson Bags increase your sales — cut your costs!

HUDSON MULTIWALLS

for further information write:

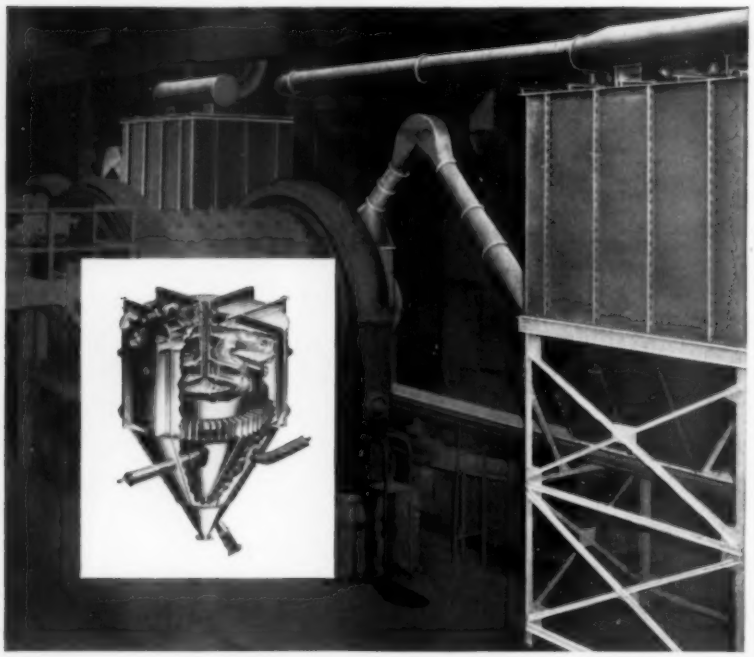
HUDSON PULP & PAPER CORP.
477 Madison Avenue • New York 22, N. Y.

Enter 1072 on Reader Card

Plants at Pine Bluff, Ark. • Palatka, Fla. • Wellsburg, W. Va.

Norblo

Dust Collection Systems and Cement Cooling *in Production Process*



Known wherever cement is made — from coast to coast and in foreign lands — Norblo's service to the cement industry is recognized for its efficient Automatic Bag Type Dust Collection plus the Norblo Cement Air Cooling System* (Patent No. 2,350,737) which combines two separate functions necessary for modern cement manufacture in one installation of maximum efficiency.

* **Cools both fines and tailings . . .**
* **Reduces cement temperature to 200° or lower . . .**
* **Keeps temperatures inside the mill at more workable levels**

Norblo engineers have wide experience in the cement field and will give you a dependable survey and estimate on adapting Norblo cooling to your present equipment and layout. Write for Cement Air Cooler Bulletin No. 165.

The Northern Blower Company
6408 Barberton Ave., Cleveland 2, Ohio • OLympic 1-1300

Norblo ENGINEERED DUST COLLECTION SYSTEMS FOR ALL INDUSTRIES

Enter 1021 on Reader Card

INDUSTRY NEWS

(Continued from page 50)

Gypsum outlook bright

FINE PROSPECTS for homebuilding in 1959 make the outlook bright for the gypsum industry. Chairman Melvin H. Baker, National Gypsum Co., Buffalo, N.Y., estimated that as many as 1.3-million nonfarm homes might be started this year, up somewhat from the 1.2 million started last year. Through the first two months of 1959, housing starts were running above 1.3 million at the seasonally adjusted annual rate, the Bureau of Labor Statistics reported.

Noting the fine 1959 outlook in their annual reports, gypsum producers also turned in reports on a very successful 1958. Bestwall Gypsum Co., Ardmore, Pa., reported a 16-percent rise in sales to $34 million last year and a big 39-percent gain in earnings, to $4.3 million, as opposed to 1957. The industry's two top producers, U. S. Gypsum and National Gypsum, posted this record last year:

	Sales		Net Income	
	Millions	Change from 1957	Millions	Change from 1957
USG	$265	up 6½%	$41	up 6%
NG	$163	up 15 %	$16	up 22%

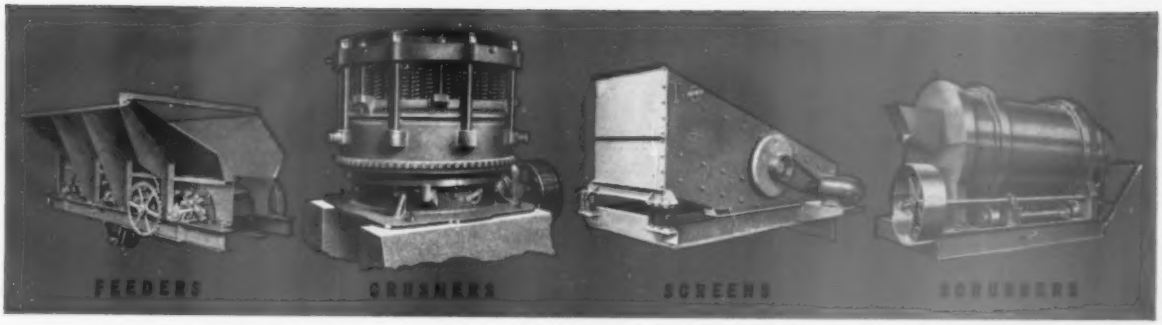
Jamaica cement firm doubles plant capacity

Jamaica and plant officials gathered as the second kiln was officially started

A SECOND 600,000-BBL. per year kiln was brought on the line at the Caribbean Cement Co., Jamaica, in February. During 1958 the island consumed more than a million barrels of portland cement, so the firm foresaw no difficulty in using the plant's entire boosted capacity of 1.2 million bbl. a year. In fact, a third kiln may be required in a very short time.

The first kiln was installed in 1952. Prior to that time, Jamaica consumed about 300,000 bbl. a year; but the lower prices made possible by the new local plant more than tripled consumption in six years. Thus, company officials foresee that within just a few years the third kiln will be needed.

(Continued on page 56)



GET THIS CHECK-UP

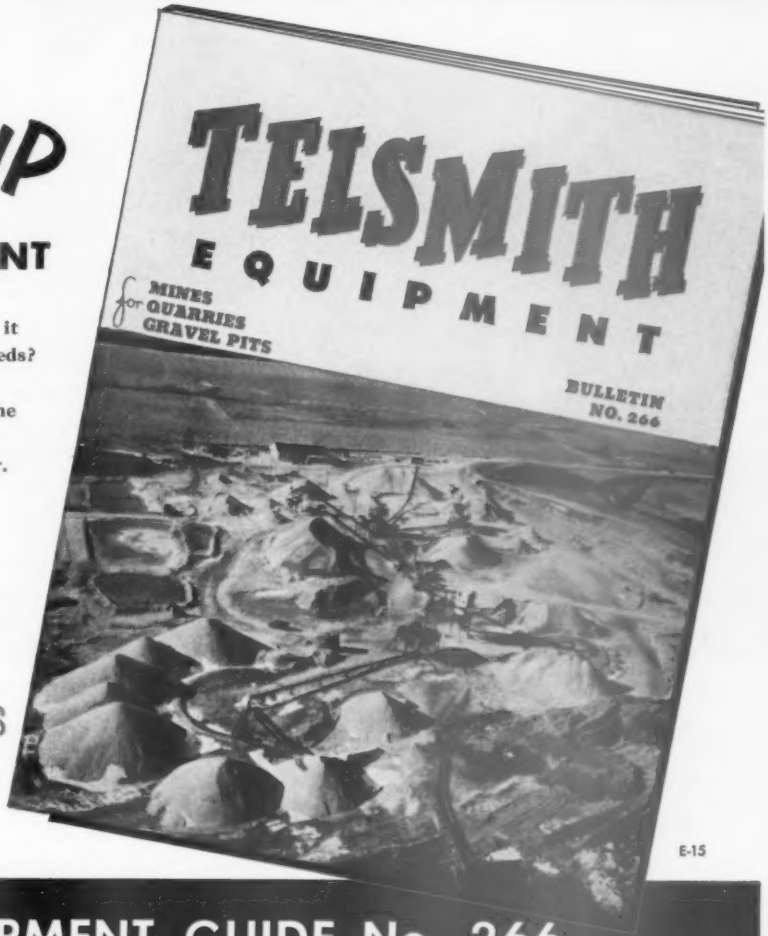
ON YOUR EQUIPMENT

Is your plant, and particularly its equipment so designed and built that it meets all your deposit and market needs? Is capacity high . . . and upkeep low? Does it pay the profits it should for the money you have invested? These are the *equipment facts* you're looking for. You'll find them in this guide. All the latest data on the newest equipment—Telsmith-engineered, modern, flexible, and the right type, model and size to turn out quality aggregate in quantity, at low cost.

●

Consult TELSMITH Engineers

let them relieve you of technical detail in plant planning and equipment selection.



E-15

NEW EQUIPMENT GUIDE No. 266

No cost . . . No obligation

SMITH ENGINEERING WORKS

508 E. CAPITOL DRIVE • **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • Cable Address: Sengworks, Milwaukee

TELSMITH

Enter 1070 on Reader Card

PROJECT PAYDIRT pays off again*

NEW 225 HP CAT NO. 619 TWO-WHEEL TRACTOR

- **First two-wheel tractor to deliver four-wheel speed and roadability!**
- **Matched with new No. 442 Series B LOWBOWL Scraper for new high production with 14 cu. yd. struck capacity!**

This new No. 619 Series B represents a major breakthrough in two-wheel tractor-scraper design. It is the first and only broad application two-wheel machine that combines two-wheel traction with four-wheel speed and roadability. It also affords new unit construction and timesaving accessibility never before built into this type of rig.

The No. 619's new turbocharged engine delivers 225 HP and a torque rise of 20% — for fast acceleration. With a top speed of 30.2 MPH, the No. 619 can really run — and run under conditions that slow down other make two-wheel rigs.

That's because of its roadability. Advanced Caterpillar design has achieved a tractor-scraper balance resulting in rides that "smooth out" to an amazing degree. This balance permits higher speeds for more cycles per day and less operator fatigue.

With all this, new hydraulic steering makes the No. 619 extremely easy to maneuver, yet retains that important "feel of the road" touch. Design permits full 90° turns with a turning diameter of 30 feet.

As for unit construction and accessibility, here's one example: A new swing-away dash allows ready access to the starting engine, air compressor and hydraulic pump. Another example: By removing six capscrews in the planet carrier cover, each axle can be removed from the tractor. The planetaries are interchangeable between sides.

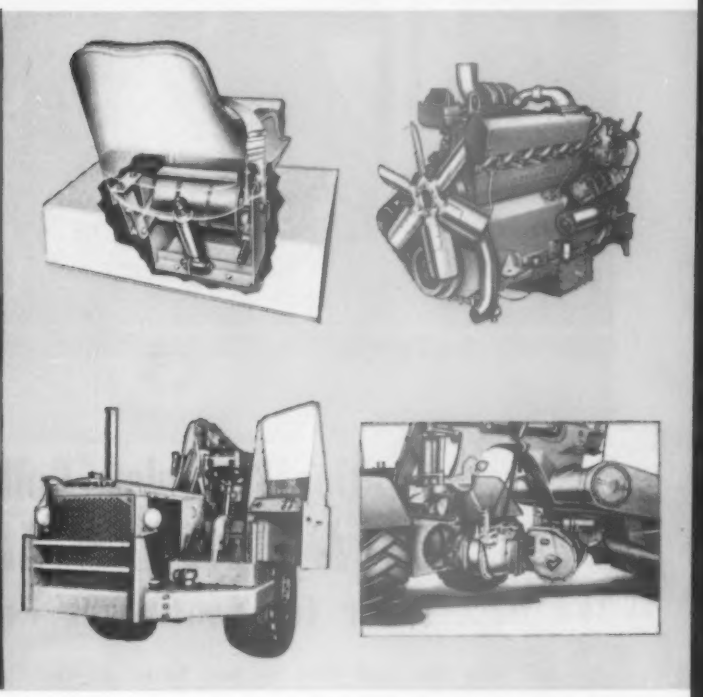
Like all achievements of Caterpillar's Project Paydirt, the No. 619-No. 442 unit has been thoroughly tested. Four years of on-the-job operation prove this: This new "all-job" machine will set new performance records on a broad range of applications.

How much does this mean to you profit-wise? Of course, that depends on your jobs. But this is certain — there's nothing like the new No. 619-No. 442 in the field today. Get the complete facts about it from your Caterpillar Dealer, who backs you with round-the-clock service and parts you can trust. Ask for a demonstration. See for yourself how it can step up production and profits on a wide range of applications.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

NEW TORSIONFLEX SEAT. New seat provides "highway" ride on off-highway conditions. Helps conserve operator's energy, lessens his fatigue, enables him to do more work per shift. One of many Caterpillar developments.

NEW TURBOCHARGED CAT ENGINE. Designed to meet the specific requirements of the No. 619. Develops 225 HP and a full 20% torque rise—for fast acceleration from cut. Fuel system permits use of economy-type fuels.



NEW NO. 442 SERIES B LOWBOWL SCRAPER. Matched to the No. 619 for high production. Capacities: 14 cu. yd. struck and 18 cu. yd. heaped. Exclusive Caterpillar LOWBOWL design provides a faster loading rate with less resistance throughout the loading cycle. Also available for use with the No. 619 is the 25-ton-capacity Athey PR619 Rear Dump Trailer.

NEW SWING-AWAY DASH. Permits timesaving access to the starting engine, air compressor and hydraulic pump. Entire left side of engine can be exposed without having to disassemble any major components connected with dash.

NEW UNIT CONSTRUCTION. Offers unmatched accessibility for servicing. Transmission differential and cable control can be quickly removed as unit. Each axle can be pulled out by removing six capscrews from planet carrier cover.

Additional facts about the No. 619-No. 442—Six-speed forward, two-speed reverse constant mesh transmission ▪ Standard wide-base 26.5-25, 24-ply tires all around—optional tread and ply ratings available ▪ Choice of in-seat gasoline starting or direct electric starting ▪ New dry-type air cleaner ▪ Fuel tank capacity—85 U. S. gallons ▪ Shipping width—10 feet, 10 inches.

CATERPILLAR'S PROJECT PAYDIRT

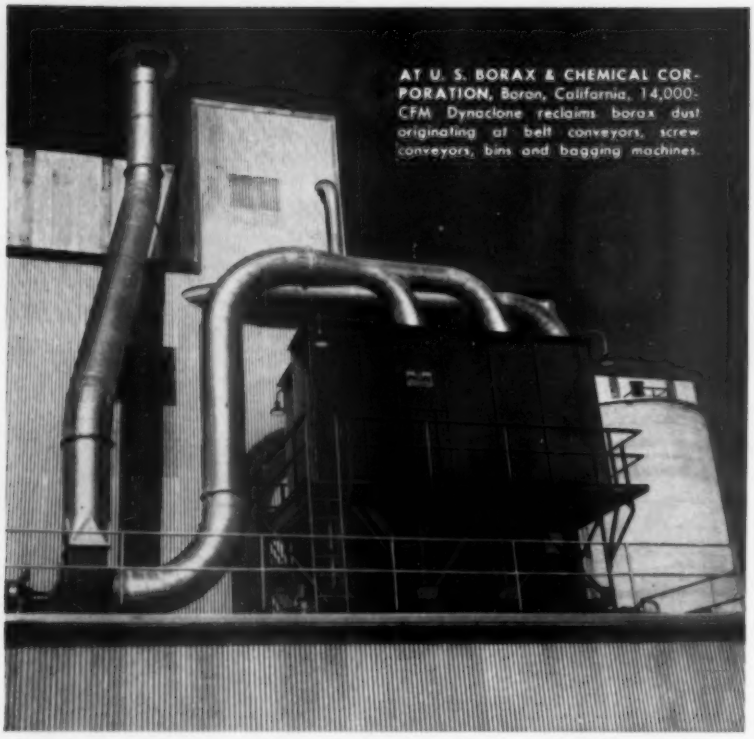
* ***PROJECT PAYDIRT:***

Caterpillar's multimillion-dollar research and development program—to meet the continuing challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH
PROVED IN THE FIELD


AT U. S. BORAX & CHEMICAL CORPORATION, Boron, California, 14,000-CFM Dynaclone reclaims borax dust originating at belt conveyors, screw conveyors, bins and bagging machines.

Constant Suction! Complete Collection!

SLY DYNACLONE®

The Dust Filter for Continuous Processes

Just turn this dust filter on and forget it. The Dynaclone operates continuously, 24 hours a day. It maintains constant, uniform suction at dust sources, reclaims all the dust to prevent air pollution and damage to plant equipment.

The Dynaclone has *new* "Resist-O-Wear" filter bags (patent pending) that give as much as three times longer bag life . . .

It has a new roller cleaner for simplified automatic self-cleaning. Resilient rubber rolls form a positive dust seal as each row of bags is cleaned by atmospheric air drawn in by the main operating fan.

And it contains more cloth per cubic foot of filter than any other make . . . greater filtering capacity with smaller space requirements.

Learn the many reasons why the Dynaclone represents a new high in dust filter efficiency . . .

Send for 36-Page Catalog 104

SINCE 1870 SLY

THE W. W. SLY MANUFACTURING CO.

4746 TRAIN AVENUE • CLEVELAND 1, OHIO
OFFICES IN PRINCIPAL CITIES

OVERSEAS LICENSEE: ANDREW AIR CONDITIONING LTD., LONDON S.W. 1, ENGLAND

Enter 1019 on Reader Card

INDUSTRY NEWS

(Continued from page 52)

Cover Story

KEY TO MAXIMUM OUTPUT cement mill operations is fast, efficient material handling. Here at Alpha Portland Cement's new plant at Lime Kiln, Md., two 80-ft. span P & H 11-ton capacity, electronically controlled, overhead cranes equipped with 4-cu. yd. clamshell buckets stockpile the crushed shale and feed the ball mill hoppers with all raw materials. This unusual close-up action photo was taken from just below the edge of the crane runway (approx. 65 ft. above the floor) for the crane manufacturer, Harnischfeger Corp., Milwaukee, Wis. Photographer: M. Hans Zielke.

Saskatchewan potash field opening up rapidly

EXPLOITATION of the world's largest known reserve of high-grade potash, in Saskatchewan, Canada, is rapidly going forward. *The Financial Post* reports that 18 firms are believed active in the search for more potash. Up to last year most of the U. S. market, about 2.2 million tons a year of K_2O equivalent, was satisfied by big deposits near Carlsbad, N.M.

But last year Potash Co. of America, Carlsbad, completed a $20-million project in Saskatchewan and is now filling part of the American demand for the fertilizer from this plant. International Minerals & Chemical Corp., Chicago, will soon complete its own $20-million plant in the big Canadian field and may eventually produce 2 million tons a year there. U. S. Borax & Chemical Corp. is making a large-scale engineering and cost survey in the area to determine the feasibility of a Canadian plant.

(Continued on page 60)

PEAK POWER OUTPUT FOR HEAVY-DUTY EQUIPMENT...

HYDRA-DRIVES®

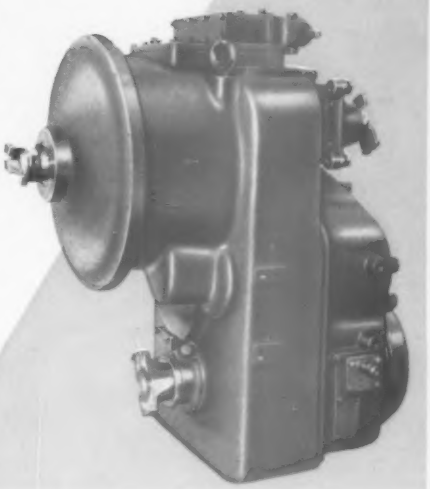
POWER SHIFT TRANSMISSIONS and TORQUE CONVERTERS

Rockwell-Standard's Hydra-Drives units make hard work easy for heavy-duty equipment. The result . . . smooth, efficient, economical operation. A torque converter and 4-speed transmission in one compact package, the Hydra-Drives Power Shift Transmissions have been proved in hundreds of vehicles. They eliminate engine lugging and heavy shock loads. A 3-to-1 torque multiplication makes starting fast and effortless—even with heaviest loads.

Just a flip of the operator's lever accomplishes power shifts without interruption of the power flow. Automatic features of the converter and ease of power shifting simplifies operator training and lengthens vehicle life.

With four speeds forward and reverse, the Hydra-Drives Power Shift Transmissions are ideally suited for vehicles which must travel in both directions during a normal work cycle.

Hydra-Drives Torque Converters are the simplest, most efficient made. They can be matched with any transmission for easier, more efficient operation.



HYDRA-DRIVES BDB Transmission

- Four speeds forward and reverse.
- Full power shifting.
- For equipment up to 175 h.p.

HYDRA-DRIVES CDB Transmission

- Four speeds forward and reverse.
- Power shift in each range both forward and reverse.
- For equipment up to 250 h.p.

HYDRA-DRIVES Torque Converter

- 3-to-1 torque multiplication.
- Available separately, or with Hydra-Drives Transmission.
- For vehicles up to 500 h.p.

HYDRA DRIVES

ROCKWELL-STANDARD CORPORATION
TRANSMISSION AND AXLE DIVISION
DETROIT 32, MICHIGAN

©1959, R-S Corp.

Products of **ROCKWELL-STANDARD** Corporation

Enter 1071 on Reader Card

"Our Ford F-800's, pulling 20-ton payloads, give us mighty good service!"

says R. Dillard Teer, Vice President
Nello L. Teer Co., Durham, N. Carolina

"We operate about 115 Ford Trucks ranging in size from ½-ton pickups to Tilt Cab Tandem tractors. We believe in carefully fitting the truck to the job to be done and usually stay within the manufacturer's recommended ratings. We make an exception to this rule with our Ford F-800's, pulling 20-ton loads in aluminum trailer dumps to our quarry and crushing setup at Durham, North Carolina. These units are carrying the maximum legal limit and give us mighty good service!

"We haven't traded any trucks in about 6 years. It just happens that our company has been growing so rapidly that when we buy a new truck, usually an F-800, I put it under one of our trailer dumps. Then I'll take the old truck, lengthen the chassis, and make a grease outfit or a water wagon out of it. I would say out of over a hundred Ford units in the past 7 or 8 years, we have gotten rid of only a dozen altogether—and some of these were wrecked or burned.

"Another reason we use Fords is that this business is rough on trucks, so parts availability is very important. Our experience over the years with Ford as compared to Ford competitors has been definitely in favor of Ford on parts."

NOW! CERTIFIED PROOF!

FORD TRUCKS COST LESS

'59 Ford Pickups beat average mileage of other leading makes by 25.2% in Economy Showdown U.S.A.

Here at last is certified proof of the differences in gas mileage between six-cylinder pickups . . . evidence that you can use in your operation.

It was compiled by America's foremost independent automotive research firm after testing 1959 six-cylinder, ½-ton pickups of the six leading makes. All trucks were bought from dealers—just as you would.

The tests paralleled every kind of driving – high speeds and low, open highways and city traffic, even door-to-door delivery. And in every test, '59 Ford Sixes delivered more miles per gallon than any other make. Here are the actual percentages:

'59 FORD PICKUP SIXES GAVE

42.6% better mileage than make "D"
31.1% better mileage than make "I"
25.2% better mileage than make "C"
22.0% better mileage than make "S"
9.6% better mileage than make "G"

Taken together, Ford got 25.2% more miles per gallon than the average of all other leading pickups!

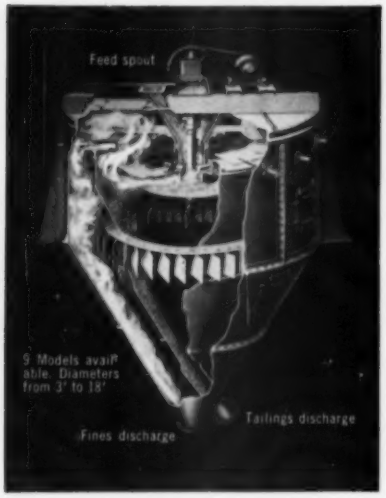
What's the secret of Ford's economy? First, of all pickup sixes, only the Ford Six has modern Short Stroke design which reduces friction and requires less fuel. Second, to this modern engine, Ford has added a new economy carburetor to meter fuel more precisely in both high- and low-speed ranges.

See your Ford Dealer for the full report of Economy Showdown U.S.A. and get the whole story firsthand.

All tests conducted and results
CERTIFIED
by America's foremost independent automotive research organization*
*NAME AVAILABLE ON REQUEST
Send inquiry to P.O. Box 2687, Ford Division
Ford Motor Co., Detroit 31, Michigan

Now! During Dividend Days at your Ford Dealer's...Go *FORD*-ward for Savings

In Cement and Aggregates the Word for Air Separation is "Sturtevant"



in cement . . .

Sturtevant Air Separators make possible highly efficient closed-circuit systems. Large circulating loads increase output, eliminate overgrinding. Ball and lining life lengthens, power costs are lowered. Top quality cement results from precise control of finenesses. Standard 16 ft. Sturtevants deliver raw fines up to 70 tph, finished fines up to 260 bph.

in aggregates . . .

Sturtevant Air Separators classify sand without water, clean sand by de-dusting it. Pre-classification by air can also increase screening production by removing screen-blinding fines. In blending operations, Sturtevants select desired fines from grinder throughput. This graded product is then used to overcome fineness modulus deficiencies.

Send for Air Separator Bulletin No. 087.

STURTEVANT
MILL COMPANY
102 Clayton St., Boston, Mass.

Crushers • Grinders • Micron-Grinders • Separators
Blenders • Granulators • Conveyors • Elevators

Enter 1023 on Reader Card

INDUSTRY NEWS

(Continued from page 56)

Cement firm moves to get Montreal land

RUMORS THAT SOGEMINES LTD. will build a $15-million cement plant on the South Shore opposite Montreal, Canada, got a fresh boost from the company's application to the Private Bills Committee of the Quebec legislature for validation of titles to industrial land it holds in St. Constant and St. Catherine, Que. According to *The Financial Post*, there has been no official confirmation of reports that the land is for a cement plant.

Sogemines Ltd. controls Inland Cement Co. and has a substantial interest in Lafarge Cement of North America, which has made a survey of market potential in the Montreal area.

It is rumored that work will start soon on a 1.5-million-bbl. plant and that Foundation of Canada Engineering Corp. has been engaged for the project.

Iowa limestone men have successful meet

IOWA AGGREGATES PRODUCERS have been spared a state tax of five cents a ton on their products, Leo Elthon told members attending the 14th annual convention of the Iowa Limestone Producers Association in Des Moines in March. While a committee shelved the bill, it probably will crop up again in future sessions to plague rock producers, Mr. Elthon said. He is chairman of the association's legislative committee and a former governor of Iowa.

Snapped in a hallway discussing industry problems were left to right, Clint Allen, executive secretary of the group, Louis B. Bray, new vice president, Tom L. Robinson, new president, and Robert L. Koch, of NCLI and NALI

More than 400 registered at the meetings, a sizable group, especially since from 9 to 20 in. of snow fell over the state on the convention's opening day, clogging highways. Tom L. Robinson, Missouri Valley Limestone Co., Oakland, was named group president. Louis B. Bray, Dubuque Stone Products Co., Dubuque, was made vice president. New directors are Mr. Bray, John L. Dillon of Dillon Stone Co., Columbus Junction, and Ralph E. Kinkead of DeWees Construction Co., Marion. Robert B. Reynolds, Heckman-Reynolds, Inc., Floyd, was re-elected as a director.

Aggregate screening plan causes ruckus at ACI

"WE VIGOROUSLY OBJECT to anyone telling us *how* to do a job. We favor tight specs, but we don't want anyone telling us how to meet them." This was the consensus of aggregates and ready-mix producers at the February 23-26 American Concrete Institute meetings in Los Angeles, when it was proposed that they install screens directly over aggregates bins in ready-mix plants.

The verbal tussle started when Lewis H. Tuthill, chairman of Committee 614, reported on "Measuring, Mixing and Placing Concrete." Mr. Tuthill is with the California Department of Water Resources. He said there frequently was too high a proportion of fines in aggregates delivered to batching plants, and recommended that the screen be added to correct this.

Leading opposition to the proposal were Stanton Walker, engineering director of the National Ready Mixed Concrete Association, and Joe Gray, director of engineering of the National Crushed Stone Association. They said the provision in concrete specifications would raise concrete costs by up to a dollar per cubic yard. Mr. Tuthill estimated that the cost would be raised only three cents a yard. The proposal was to be sent out to ACI members for a mail vote.

New officers elected at the meeting are Prof. Phil M. Ferguson, University of Texas, president, and Mr. Tuthill, vice president. New directors are Roger H. Corbetta of New York City, George O. Ernst of the University of Nebraska, E. A. Finley of Lansing, Mich., and Walter J. McCoy, Coplay, Pennsylvania.

(Continued on page 63)

THE WEMCO MOBIL-MILL PLUS WEMCO EXPERIENCE WILL GIVE YOU HIGH-VOLUME SPECIFICATION AGGREGATE AT LOW COST!

The heavy media separation process literally floats away undesirable shale, chert, clayballs, coal and other materials, produces volume, premium aggregate at low cost.

And the HMS equipment most often turned to for proved specification production is Wemco. Wemco's Mobil-Mill is the only pre-fabricated packaged plant backed by such long experience—nearly 20 years—with a record of over 150 installations. The Mobil-Mill is ready for on-the-site installation and operation without a break-in period.

Requires, in most cases, no additional labor, minimum supervision and maintenance.

Ask for complete information on the Wemco Mobil-Mill and other equipment now.

WEMCO®

a division of
Western Machinery Company, *Dept. R.P.*
650 Fifth St., San Francisco, Calif.
and throughout the world

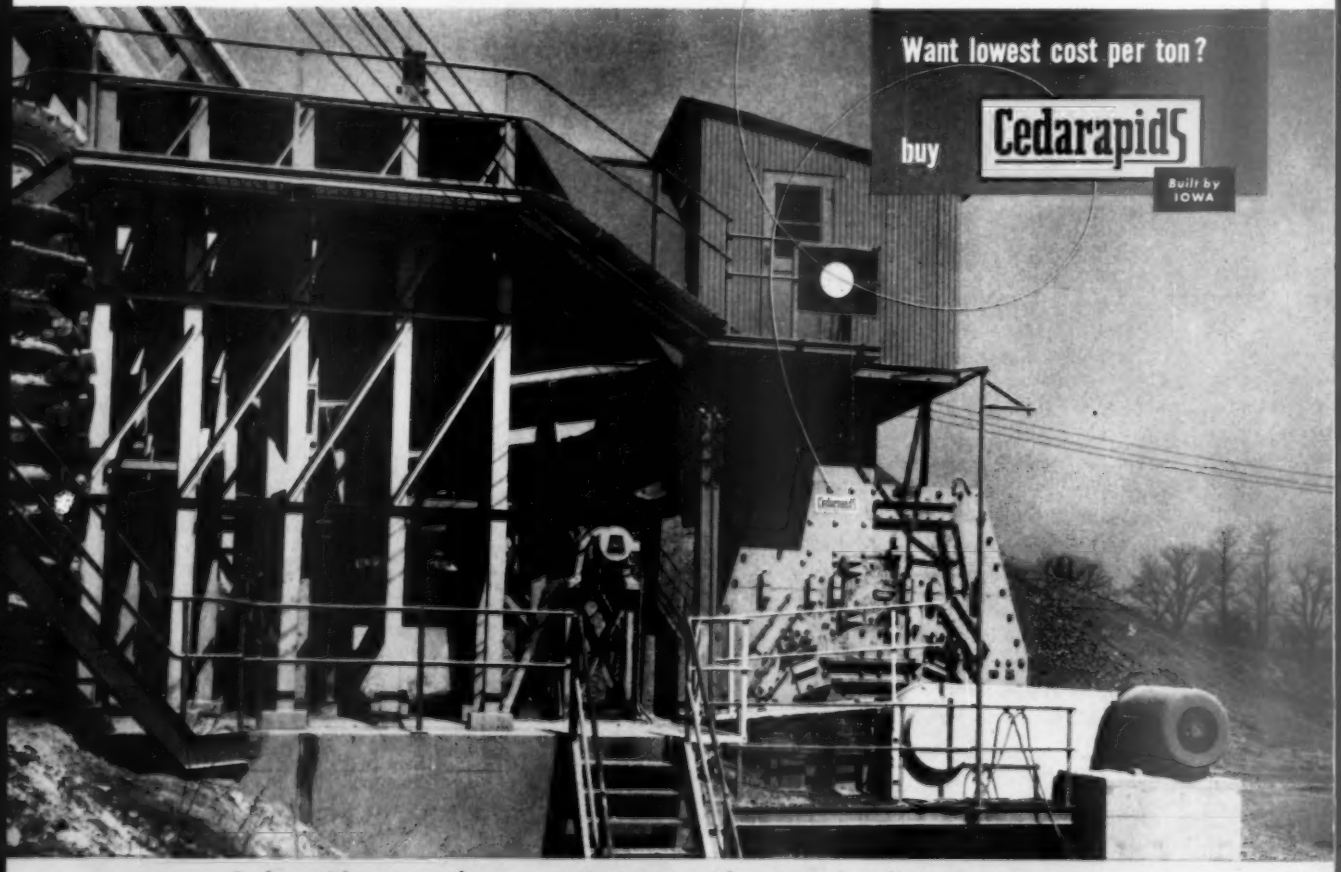
Enter 1077 on Reader Card

Here's why more cement producers prefer
CEDARAPIDS DOUBLE IMPELLER IMPACT BREAKERS

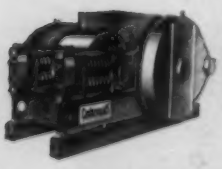
Up to 1000 tons per hour capacity! Six model sizes to choose from • High 40 or 50 to 1 reduction ratio cuts production costs, reduces need for auxiliary secondary crushers, screens, conveyors, etc. • Low maintenance and operating costs; rock enters the unit from the highest point to utilize the entire breaking chamber for breaking rock against rock. With 50% less contact of stone against metal, wear on hammers and breaker bars is reduced and horsepower requirements are cut • These are a few of the many benefit-features of Cedarapids Double Impeller Impact Breakers which help cement producers step up output and cut costs for crushing limestone and shale • See your Cedarapids Dealer for complete details.

This cement company produces 300 tph, with 80-90% of material being crushed

Crushing high calcite limestone, a prominent Eastern cement producer operated its 4350 Double Impeller Impact Breaker on 8 hour per day shifts. With 80% to 90% of material requiring crushing, the peak production for one shift was 2400 tons! Taking rock up to 43" in diameter, the Cedarapids Breaker reduced it to 3" product in one pass.



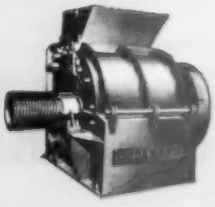
Cedarapids serves the cement industry with a complete line of equipment



ROLL CRUSHERS, in 6 sizes with 3 types of roll shells, insure high capacities of the smaller sized finished product you want.

HORIZONTAL VIBRATING SCREENS provide as much as 12½% greater screening area than inclined screens of the same size. Available in 3' x 8' to 60" x 16' sizes, with double or triple decks.

HAMMERMILLS produce a much finer quality of product, and size for size, produce more tons per hour than other similar types of equipment.



IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa

INDUSTRY NEWS

(Continued from page 60)

General Portland and Consolidated may merge

DIRECTORS OF GENERAL PORTLAND Cement Co. and Consolidated Cement Co., both of Chicago, have voted to merge the two firms, subject to stockholder approval. The merger would make the firm fifth largest in the U.S. portland cement industry with annual capacity of about 25 million bbl.

Under terms of the merger agreement, each present share of General Portland common stock would be split into two shares. Then each share of Consolidated common would be converted into 1⅕ shares of General Portland common. Stockholder voting on the proposal was to be held April 28.

General Portland operates six plants: at Tampa and Miami, Fla.; Chattanooga, Tenn; and Fort Worth, Houston and Dallas, Tex. The firm had 1958 sales of $47 million and was about ninth largest U.S. producer with annual capacity of 19 million bbl. Consolidated has annual capacity of 6 million bbl. Sales of the firm's plants at Cement City, Mich., Paulding, Ohio, and Fredonia, Kan., totaled about $12 million last year.

ASTM aggregate standards compiled in new book

A COMPILATION SPONSORED by ASTM Committee C-9 on Concrete and Concrete Aggregates and Committee D-4 on Road and Paving Materials includes all of the standards prepared by Committee C-9, but only those for aggregates and other selected highway materials developed by Committee D-4. In addition it contains pertinent specifications for cement which are under the jurisdiction of Committee C-1 on Cement.

The book contains 101 standard specifications, methods of test, recommended practices and definitions of terms for mineral aggregates, concrete, concrete curing materials, expansion joint fillers and miscellaneous related specifications. References are given for specifications on concrete reinforcing steel, paving block and brick and bituminous and non-bituminous road materials. Of the included standards, 46 are new or revised since the 1956 edition, which is superseded.

Copies of this book may be obtained from ASTM Headquarters, 1916 Race St., Philadelphia 3, Pa.

Compilation of ASTM Standards on Mineral Aggregates and Concrete C9-D4, 384 pages, 6 x 9 in., $4.75.

(Continued on page 68)

UTAH AGGREGATE PRODUCER RELIES ON DEPENDABLE BROOK A. C. MOTORS

THIS Utah aggregate producer is assured of dependable power for every operation. Fourteen BROOK MOTORS power crushers, screens, feeders and conveyors. Brook Motors cost them less to install, are tailored to the job and assure lower maintenance costs. There is no finer motor made, as many sand and gravel, and crushed stone plants have found out. Send for catalog.

world's most respected motor

BROOK MOTOR CORPORATION

3302 WEST PETERSON AVE., CHICAGO 45, ILL.
In Canada: BROOK ELECTRIC MOTORS OF CANADA LTD.
250 University Ave., Toronto, Ontario

SINCE 1904 BROOK MOTOR CORPORATION

Factory Representatives, Warehouses, Dealers in Principal Cities.

Enter 1025 on Reader Card

NO SPOT FOR A BREAKDOWN!

KEEP IT GOING AT ITS BEST ...USE ONLY GENUINE HAYWARD REPAIR PARTS!

Hayward Buckets are designed with the most efficient construction features known. And only with genuine Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise operating costs and disrupt schedules.

Anticipate any possible breakdown.
Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY

50 CHURCH STREET, DEP'T R, NEW YORK 7, N. Y.

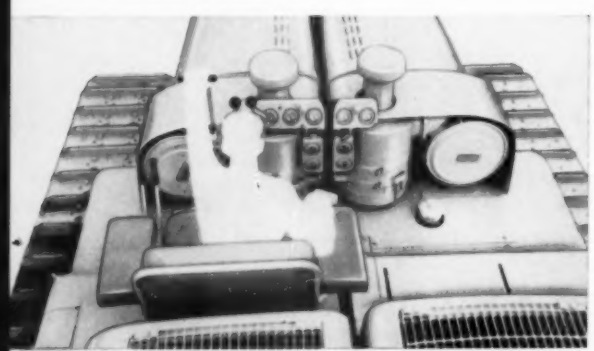
Builders of Better Buckets Since 1888

Enter 1026 on Reader Card

Tremendous power, quick maneuvering and on-the-go power shift cut valuable seconds from cycle times when the TC-12 is used for push-loading scrapers.

As a dozer, this Twin-powered Crawler provides unmatched work-ability because of its ease of handling, smooth push power and brute strength.

For heavy ripping work, you can count on unequalled drawbar pull and plenty of stability to do a really fast and thorough job.



With convenient, simplified controls, the TC-12 has no equal for operating ease—by keeping operator fatigue to a minimum, full shift efficiency can be maintained.

New Series EUCLID

Ever since the TC-12 was introduced, there has been no question about its top performance ability—even on the toughest crawler jobs. Now with over 3 years of field experience on practically every kind of operation, major product improvements make the new TC-12 better than ever.

Powered by two engines, there's a total of 402 net horsepower delivered to the power train through separate Torqmatic Drives for each track. Big 27" shoes and 8 rollers give the TC-12 good balance with or without heavy duty dozer blades and other mounted equipment. Bare weight of the tractor has been increased to 67,000 lbs. as a result of heavier construction and more rugged components throughout.

With independent track drives, there's no dead track drag when turning—maneuverability of the big TC-12 with its full power shift saves seconds on every cycle whether you're push loading scrapers, dozing or pulling big equipment. And with unitized assembly, good design of component location and equipment mountings, this "Euc" crawler provides easy accessibility for service and maintenance.

Have your Euclid dealer give you all the facts on the new TC-12 . . . you'll find it's your best buy by far where big tractor performance is needed.

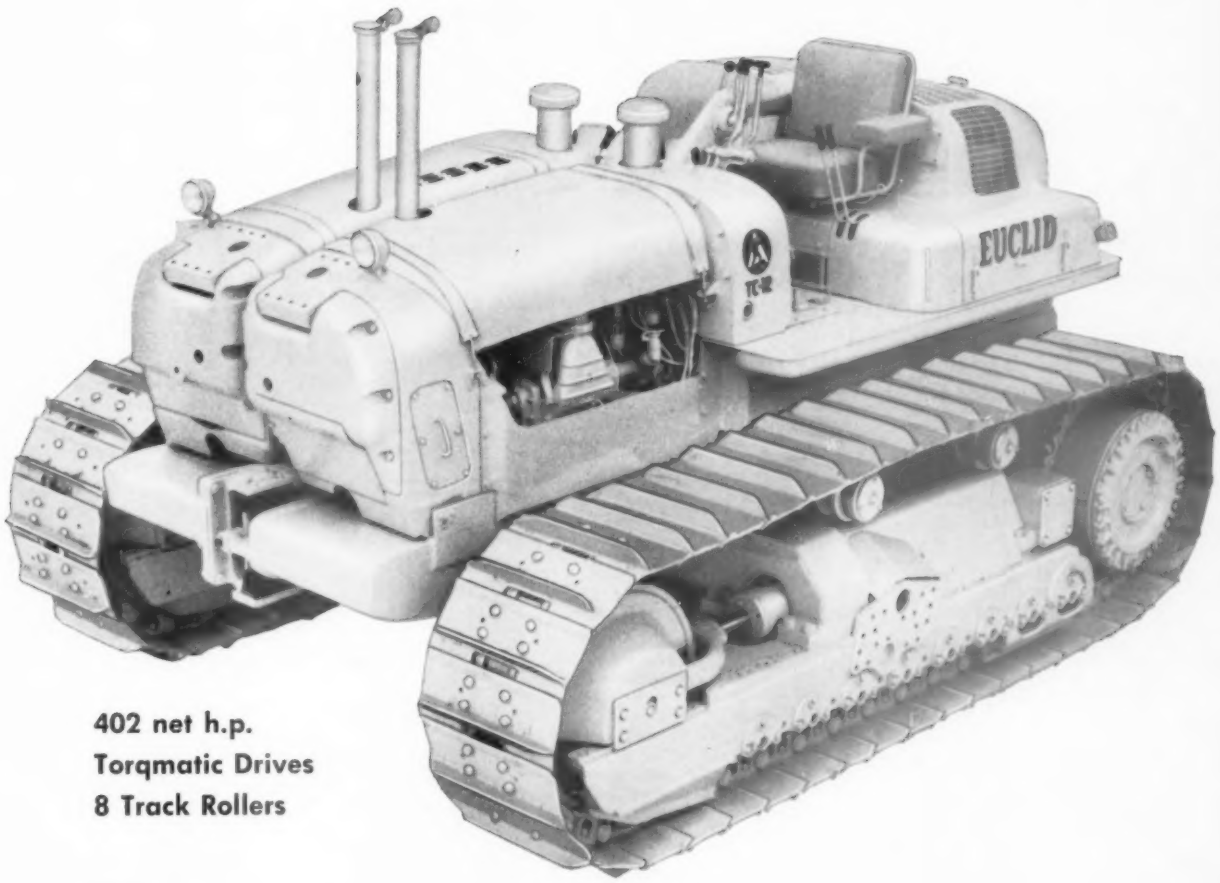
EUCLID DIVISION of GENERAL MOTORS, CLEVELAND 17, OHIO

TC-12 ...now even further ahead of other crawlers

in maneuverability . . . service accessibility . . .

in functional design . . .

and in work-ability



402 net h.p.
Torqmatic Drives
8 Track Rollers

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

NORDBERG Cement Mill MACHINERY

...quality-built to give you longer service life—lower operating costs

Recognized by the cement industry for its quality construction and resulting ability to assure maximum, continuous production at low operating cost is the extensive line of dependable Nordberg machinery.

Nordberg cement machinery includes Symons® Gyratory Crushers for primary crushing of raw materials; Symons Standard and Short Head Crushers for preparation of finely, uniformly sized raw mill feed; Symons Vibrating Grizzlies and Screens for scalping and sizing; wet and dry grinding rod, ball, tube and compartment mills; rotary dryers, kilns and coolers.

For dependable, low cost power, a complete line of Nordberg Diesels, in sizes to more than 11,000 hp are available to meet practically any cement industry power requirement.

If you are looking for ways to increase operating efficiency and lower production costs, it will pay you to investigate the advantages of Nordberg machinery and the technical engineering services available.

SEND FOR CEMENT BROCHURE

This brochure illustrates the full line of quality Nordberg machinery designed and built for more efficient cement plant operation. Write for your copy today.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

NORDBERG

© 1958, N.M.Co. Q158

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON
KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK
ST. LOUIS • SAN FRANCISCO • TAMPA • WASHINGTON
TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D.F.

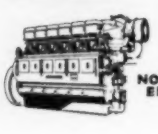
SYMONS GYRATORY CRUSHERS

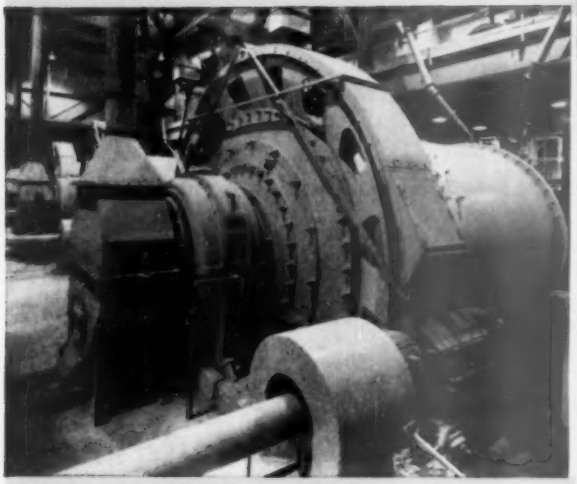
SYMONS CONE CRUSHERS

NORDBERG MINE HOISTS

SYMONS VIBRATING GRIZZLIES

SYMONS VIBRATING SCREENS


NORDBERG ENGINES

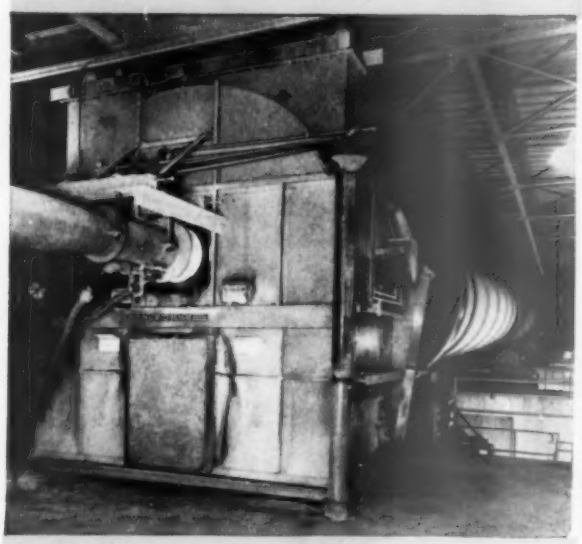


Directly above is a view showing one of three 11′ x 17′ Nordberg Grinding Mills recently installed for finish grinding operations at a large Midwest cement plant.

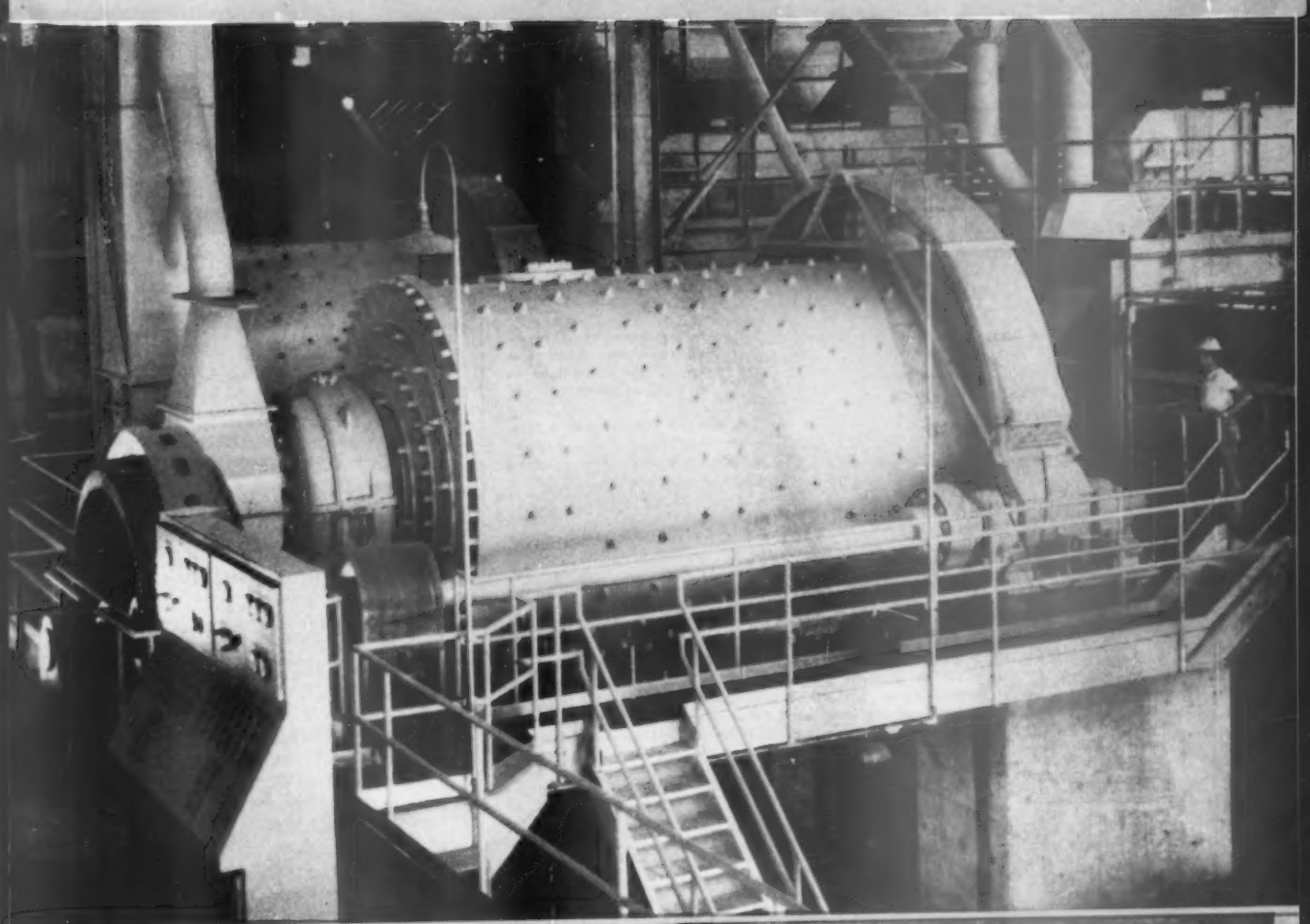
The large illustration at the right shows part of a group of five 11′ x 17′ Nordberg Grinding Mills installed for dry process service at a newly completed cement plant.

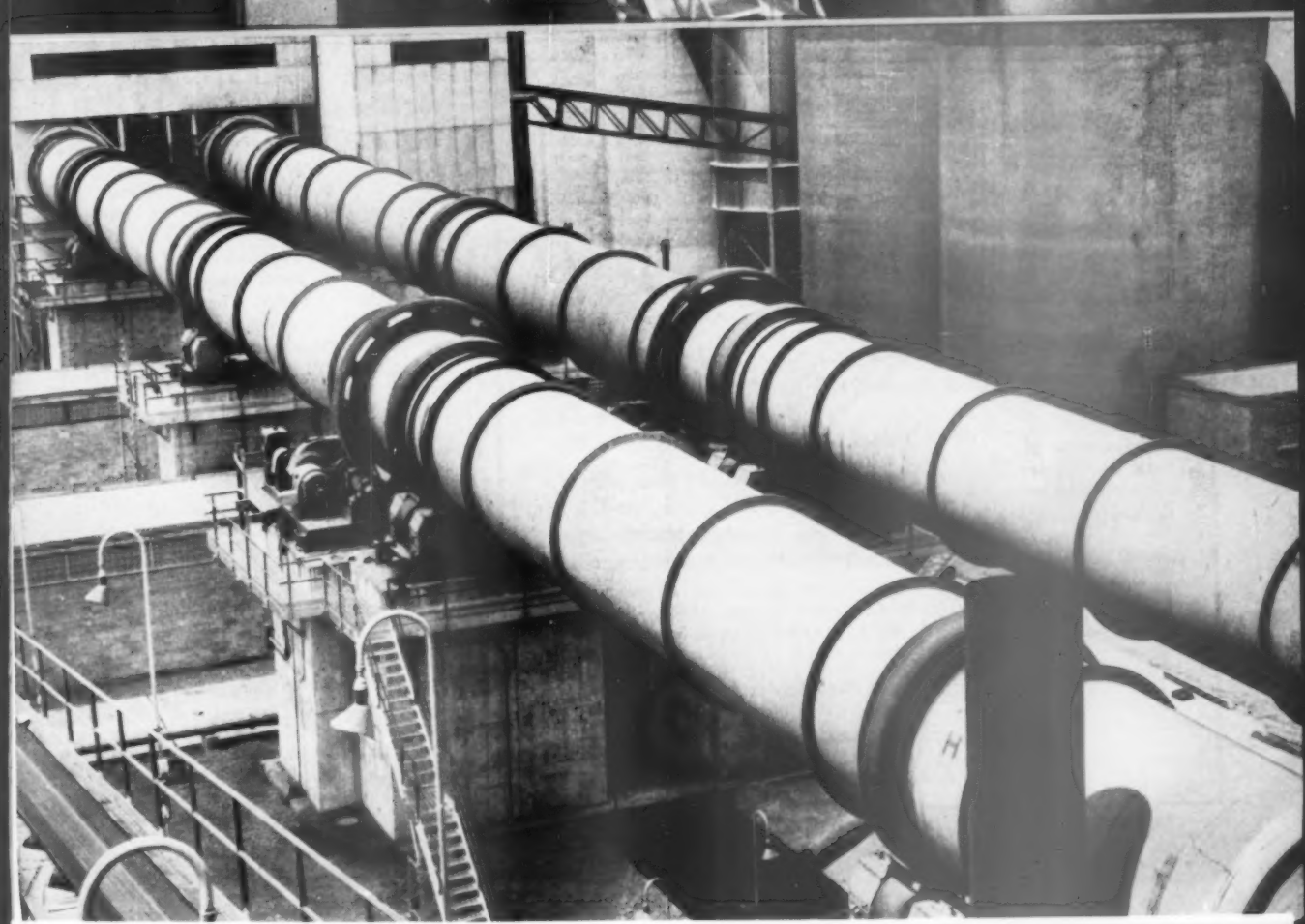
Illustrated at the right are two 11′ diameter x 360′ Nordberg Rotary Kilns installed during the recent expansion of a large Midwestern Portland Cement plant.

Shown directly below is a close-up view of a new Nordberg Rotary Kiln used in cement processing. Shown from the firing hood end, this unit measures 11′ in diameter x 380′ in length.



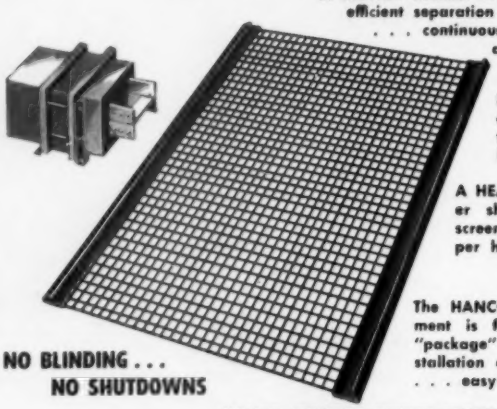
SYMONS **. . . a registered Nordberg trademark known throughout the world.**





SCREEN MORE TONNAGE PER HOUR
with Hanco ELECTRIC SCREEN HEATERS

A HEATED SCREEN remains open . . . permits efficient separation of materials at all times . . . continuous operation possible day after day



Faster screening is assured since fine moist materials will not adhere to HEATED SCREENS

A HEATED SCREEN means fewer shutdowns . . . longer screen life . . . more tonnage per hour and thus . . .
HIGHER PROFITS

The HANCO screen heating attachment is furnished as a complete "package" . . . an average installation consists of only 5 PARTS . . . easy and quick to install

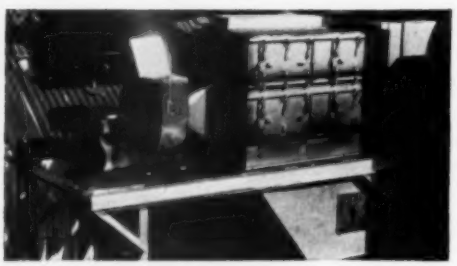
NO BLINDING . . .
NO SHUTDOWNS

HANCO ELECTRIC SCREEN HEATERS are adaptable to virtually all woven screens and can be quickly attached to new or existing single or multiple-deck vibrating screen installations. HANCO models meet all capacity requirements and are ideal for heating either stainless or tempered steel cloth. Your inquiry will receive prompt and effective attention from our experienced engineers whose recommendations will assist you in increasing production and reducing screening costs.

Hanco

WRITE TO
F. R. HANNON & SONS
1605 Waynesburg Rd. SE., Canton 7, Ohio
CABLE ADDRESS: HANCO

Enter 1027 on Reader Card



Barely visible discharge from exhauster in this unretouched photo shows how Dustex Miniature Cyclone Collector ended a problem for Perlite Products Co.—while recovering 70 lbs./hr. with no maintenance.

"95% PREDICTED EFFICIENCY PROVED . . .
and Collector is maintenance-free!"
. . . at Perlite Products Company

Frank W. Shaffer, President of Perlite Products Co., Primos, Pa., writes this about his Dustex Miniature Cyclone Collector purchased on a basis of the Dustex Single Tube Determination test:

"Your predicted efficiencies of 95% are proven . . . collecting 70 lbs./hr. of 85% below-325-mesh material at 450°F . . . complaints on discharge are ended, and the collector is maintenance-free."

Write Today for Dustex Bulletin "A Simplified Test Method" describing actual collection test at your plant at no obligation.

25 ANDERSON ROAD • BUFFALO 25, N.Y.
dustex CORP.

Enter 1028 on Reader Card

INDUSTRY NEWS

(Continued from page 63)

Mining Congress meets

A SPECIAL SESSION on "Cost Cutting in Open Pit Mining—Industrial Minerals" will be featured on the technical program of the American Mining Congress Coal Show in Cleveland on Tuesday afternoon, May 12, 1959. This convention and exposition, which will be open from May 11 to 14, will include what is said to be the largest showing of mining and earth-moving equipment ever assembled.

Three speakers—one an aggregate producer, another an iron miner and the third from the coal stripping industry—will tell about the latest developments in "Blasting Wet Holes with Ammonium Nitrate." C. R. Fahnestock of Caterpillar Tractor Co. will give the results of a study conducted throughout the United States which demonstrates the feasibility of "Determining Overburden Composition with a Simple Seismograph." A U. S. Steel Corp. representative will tell how "New Steels Can Cut Operating Costs," and a presentation of "Cost Reduction in Quarrying through Automation" will be delivered by a speaker from the Consumers Co. Div. of Vulcan Materials Co. A leading operating man will talk on the "Economics of Various Types of Quarry Haulage."

ASTM cement standards compiled in new booklet

OF MAJOR ASSISTANCE to engineers, public agencies and laboratories concerned with the national highway construction program, and to users of cement in concrete structures and buildings, is the new compilation of ASTM Standards on Cement. The general refinement of standards by Committee C-1 on Cement is evidenced by the updating of 15 of the 34 standards included. Of particular interest are the revisions in the Specifications for Portland Blast-Furnace Slag Cement (C 205) and the Methods of Sampling Hydraulic Cement.

In addition to the standard specifications, methods of test and definition of terms, appendixes contain a Manual of Cement Testing with detailed information to assist the plant chemist in the performance of the cement tests; a list of selected references and a discussion on analytical balances and weights. This 13th edition supersedes the 1957 edition.

Copies of this 278-page book may be obtained from ASTM Headquarters, 1916 Race St., Philadelphia 3, Pa., at $3.50 each.

(Continued on page 70)

HOW TO INCREASE CEMENT PRODUCTION UP TO 50%...

The capacity of an existing tube or compartment mill can be increased up to 50% or even higher simply by installing a Bradley Hercules Mill as a preliminary pulverizer on either the dry raw or finish side. Yet this increased production of cement raw material or finished cement is obtained at no increase in horsepower consumption per ton or barrel produced. The Hercules automatic electrical feed control eliminates manual operation. Rugged construction . . . dustless operation . . . easy accessibility to grinding parts keep maintenance costs at an absolute minimum. That's why so many in the cement industry rely on the Hercules Mill for increased production of finished material.

See Chemical Engineering Catalog or for complete information, write for Catalog No. 63

BRADLEY PULVERIZER CO. LONDON ALLENTOWN, PA. BOSTON

superior grinding equipment since 1891

Enter 1078 on Reader Card

WHICH 3 OF THESE USED EQUIPMENT BUYS IS BEST FOR YOU?

Only your Caterpillar Dealer offers you these three protected buys on used equipment. Which is best? That depends on how you want to use a unit and what you want to pay. Whatever you want, you'll find it in his lot.

1 **A "BONDED BUY"** on used Cat-built equipment is your safest buy. A bonded guarantee, up to $10,000, of satisfactory performance on *all* parts is given when you purchase a "Bonded Buy" used Cat-built machine.

2 **A "CERTIFIED BUY"** covers units of any make in good condition. This type of protection carries your dealer's written guarantee of satisfactory performance.

3 **A "BUY AND TRY"** deal is just what its name implies. This protects you with your dealer's written money-back agreement.

You *know* what you're buying from your Caterpillar Dealer. You'll find him listed in the Yellow Pages. Visit his Used Equipment headquarters for the best buys in the market!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST BUYS IN NEW AND USED EQUIPMENT

Enter 1029 on Reader Card

INDUSTRY NEWS

(Continued from page 68)

Missouri aglime group makes ASC recommendations

THE MISSOURI LIMESTONE Producers Association has recommended to their state Agricultural Stabilization and Conservation committee that it adopt these proposals:

1) That samples of aglime be taken at least once a month, and preferably weekly, whether lime is being delivered or not. If the sample is taken from a truck, it should be from the stockpiling truck when deliveries are not being made.

2) The group is opposed to sampling from a truck, for it does not believe representative samples are got. However, if such sampling is necessary, the group recommends that the sample be taken before the truck leaves the quarry and only when a representative of the quarry is present.

3) No original guarantee or upgrading of existing guarantee of aglime content should be accepted until it has been verified by the state ASC office as reasonably correct.

4) Every county should pay for magnesium used in correcting soil acidity. One-half the value of the magnesium should be paid whether it is requested or not, for it isn't fair to the producer that the consumer should benefit from it without paying for it.

5) Some method should be devised to speed up payment of cost share payments. The Association has received many complaints of payments running up to 6 months behind.

END

Calendar of Coming Conventions

1959

May 11-14, 1959—
American Mining Congress Coal Show, (session on open-pit mining—industrial minerals, May 12), Municipal Auditorium, Cleveland, Ohio

May 17-19, 1959—
Empire State Sand, Gravel and Ready Mix Association, 8th Annual Convention, Sheraton-Brock Hotel, Niagara Falls, Ontario

June 8-9, 1959—
National Agricultural Limestone Institute, Mid-Year Meeting, Sheraton-Blackstone Hotel, Chicago, Ill.

June 8-9, 1959—
National Crushed Limestone Institute, Mid-Year Meeting, Sheraton-Blackstone Hotel, Chicago, Ill.

June 17-20, 1959—
Expanded Clay & Shale Association, Mid-Year Meeting, New York, N.Y.

June 21-26, 1959—
American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N.J.

September 14-17, 1959—
American Mining Congress, Convention, Metal Mining & Industrial Minerals, Denver, Colorado

September 27-30, 1959—
National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Lake Placid Club, Lake Placid, N.Y.

October 11-16, 1959—
American Society for Testing Materials, Third Pacific Area National Meeting, Sheraton Palace Hotel, San Francisco, Calif.

Enter 1083 on Reader Card

engine power BY CATERPILLAR

How Cat Diesel power pays off in industrial and mine locomotives

Today, not all industrial and mine locomotives have Caterpillar Diesel power. But the trend is definitely in that direction in locomotives up to and including 70-ton capacity. A locomotive assignment is no "bed of roses" for a diesel. That is why owners insist on the excellent productivity offered by Caterpillar. In both new locomotive purchases and in locomotive repowering jobs, men who demand more work from their diesels specify Caterpillar Diesel Engines.

If locomotives are a part of your production picture, these benefits of Cat power should be considered:

POWER RESERVE. Cat Engines deliver power needed to overcome adverse grades and bends. Their high torque rise and reasonable ratings will take heavy loads where "paper" horsepower is left behind.

WIDE RANGE OF FUELS. Cat Engines burn many fuels other diesels do not use. This non-premium appetite pays off in several ways: you can burn lower priced fuel . . . and you can burn heavier fuel (per gallon) with more resultant horsepower output.

FUEL BURNS COMPLETELY. The nonsensitive, foul-free Caterpillar-built fuel injection system gives complete fuel burning because of its precombustion chamber design. It transforms more of your fuel dollar to work and gives a clean exhaust that does not cloud up tunnels or foul up air underground. A variety of scrubbers, available for Cat Diesels, makes many of these engine arrangements permissible for use underground.

GOOD BREAKAWAY POWER. A Caterpillar Diesel-Torque Converter or Diesel Electric Drive enables a locomotive to break away large loads without an assist. This feature eliminates the high clutch costs on a direct drive installation. Most owners who have converted to these methods comment favorably on their advantages.

NEARBY PARTS AND SERVICE. Caterpillar Dealer Service facilities are available in all countries of the Free World—over 840 outlets place your Cat Diesel always near a parts and service source. This is why most manufacturers will offer Cat power when nearby parts and service are important factors.

HEAVY-DUTY DESIGN. The Cat Diesels that are offered for locomotive power are the same basic engines that have long been standards in the tough construction and mining industries.

Caterpillar Tractor Co., Peoria, Ill., U. S. A.

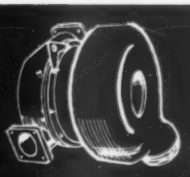
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Caterpillar Dealers have cooperated closely with many large construction, mining and industrial companies on the solution to locomotive repowering problems. Your dealer will be glad to analyze your conditions and offer a repowering solution. For new equipment, contact your locomotive branch office or mail the coupon below.

Your Caterpillar Dealer Engine Specialist is your diesel power consultant. He's backed by quality parts, reasonably priced, and a skilled staff of factory-trained servicemen. Call him now to avoid problems later.

TURBOCHARGER — standard on most Cat Engines—gives more horsepower per pound of engine weight . . . improves efficiency by utilizing waste energy which reduces fuel consumption per horsepower-hour.

DES



Dept. RP5, Engine Division
Caterpillar Tractor Co., Peoria, Illinois

Please have your representative get in touch with me and survey my locomotive power requirements. I am interested in diesel power for ☐ a new locomotive ☐ repowering an old locomotive. (If repowering, specify size of locomotive:_____)

Name_____

Company_____

Address_____

City_____ Zone____ State_____

HINTS AND HELPS

Profit-making ideas developed by operating men

Plain and fancy blending proportions two sands

AT A NEWER WESTERN sand and gravel operation it takes two grades of sand to make the final blend of specification sand. One sand is prepared in a heavy media system and placed in storage; the other is produced in a seven-spigot water scalper and taken to a storage pile to drain.

A reclaim tunnel under each material has a belt conveyor fed by weighing belt feeders. These feeders are set to draw out the right proportion of each aggregate for each belt conveyor system. The conveyor systems converge at a common point to make a single cone of material. Blending is achieved as the trajectory of each conveyor discharge mixes with sand from the opposite conveyor. Some additional mixing takes place as front end loaders load out material into trucks to be hauled to the point of use.

Gasket repair

ROCK PRODUCTS PRODUCERS often need to measure for a gasket without taking a flanged connection apart. Measurements can be accurately made from the outside with only a pair of calipers. This is done by measuring the distance from the inside of one bolt to the inside of the bolt exactly opposite, obtaining the outside diameter of the gasket. There is usually some error when the usual procedure is followed to measure the bolt circle and to subtract the diameter of the bolt.

The inside diameter of the gasket may usually be best obtained from tables giving pipe dimensions. It is important that the inside diameter of the gasket should be the same as the inside diameter of the pipe. Then there will be no opportunity for either pockets or projections to set up turbulence and reduce the efficiency of the system.

Needless to say, it's always a good plan to have a number of extra gaskets available all the time to avoid the trouble of measuring the pipe each time a new gasket is needed.

W. F. Schaphorst
Newark, N. J.

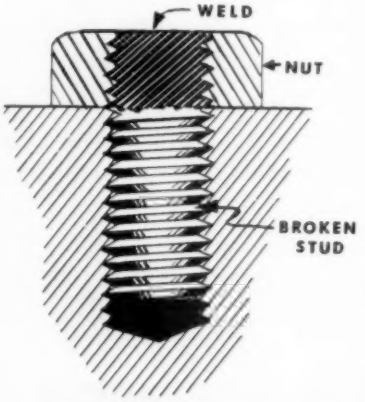
Portable welder

MORE MANUFACTURERS are getting into the Hints and Helps business as they recognize the needs of rock products producers for special machinery to do unusual jobs. Here's where a tractor manufacturer teamed up with a welding outfit and the maker of a portable electric generator to solve one more thorny problem for the harassed maintenance man.

Emergency welding repairs can now be made in any location the tractor can get to, or for that matter, the unit can supply emergency lighting or energy for power tools up to its rated capacity of 4 kw.

The special generator is mounted on a bracket at the end of a tractor and is driven from a power takeoff. Plug-in receptacles provide either 110 or 220-v. current and enough power to operate a portable 180-amp. welding setup.

Want to remove broken studs easily?



WHY GO TO THE TROUBLE to drill and chip out the stems of broken studs, big machine screws or bolts when it is often possible to remove them in one simple operation? Take a heavy nut about the same size as the broken stem and position it carefully above the fracture. Then tack the inside of the nut to the top of the stud before filling the inside of the nut with weld. When cool the nut and stud will be solidly joined; frequently the heat of welding will have broken the freeze which caused the bolt or stud to fail in the first place.

Naturally, this method is not infallible. Care must be observed not to weld the nut to any part of the frame or machine except the butt of the broken stud. And when there is any risk of damage to machined surfaces, it will usually pay to use the conventional method of drilling out the stud and rethreading the hole.

W. F. Schaphorst
Newark, N. J.

(Continued on page 77)

3 New International® Earthmovers

new CAPACITIES (24 yd. scrapers, 27 yd. wagon)

new POWER (375 hp)

new SPEEDS (to 29.1 mph)

Higher speeds possible with optional equipment.

International 24 cu. yd. 295 Payscraper

Heaped: 31 cu. yd.
Overall length: 44'8".

New high visibility color. Optionally available on all three models in either Federal yellow or International Harvester red.

NEW positive push-type ejection assures quick clean dumping of all materials.

NEW advanced lift frame construction with A-frame-type gooseneck that: 1) increases visibility; 2) distributes weight evenly along cross tube; and 3) protects sheaves of bowl lift system.

NEW full 90° turns with power steering.

NEW 375 hp DT-817 turbocharged 6-cylinder diesel engine. See page 4.

NEW cycle-shortening haul speeds to 26.2 mph plus unmatched maneuverability.

NEW exclusive tapered bowl. See next pages.

NEW high 98" apron opening. See pages 2-3.

NEW automotive comfort and control features . . . 16-adjustment bucket seat . . . reach-easy controls . . . unobstructed vision . . . air brakes . . . flush deck.

NEW Model 280 cable control unit . . . finger-tip control . . . fast acting . . . high capacity . . . simple adjustments . . . less maintenance.

See 3-axle models on inside pages...

27 CU. YD. International 495 Paywagon®

Heaped: 40.5 cu. yd.
Payload: 40.5 tons.
Overall length: 50'4½".

Here in the 27 *cu. yd.* International 495 Paywagon is everything that's new and productively *different* in bottom dump design. New 375 hp engine for greater power *per struck yard than any comparable rig.* New higher side and rear end clearance to roll away from any dumped load. New power-opened clamshell doors for positive controlled dumping. New wiper plates put 100% of each load on the fill. New automotive comfort and control features *that* let the operator produce more with less effort. New full 90° turning in either direction. New low design for haul road stability.

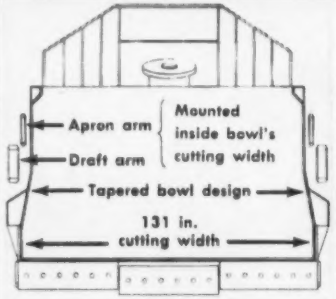
New exclusive power-opened clamshell doors afford positive controlled dumping. Operator spot dumps entire load or windrows material in lifts from a few inches on up. Wiper plates shave all material from doors as they raise. Doors gravity close, eliminating complicated mechanism.

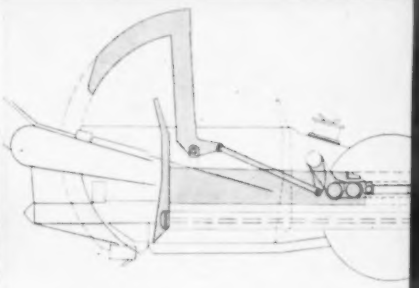
Unmatched 60" rear end dumping clearance lets rig pull fast from fill with no dangling doors dragging on dumped material. Open rear frame lets loader spillage fall through — prevents buildup of "free loading" material.

375 HP 495 prime mover gives both 495 Paywagon and 495 Payscraper more hp per struck yard with less gross weight per hp than any similar sized earth mover. Speeds to 29.1 mph. 10'8¼" wheel base. Full 180° non-stop turns can be made within 39'11¾".

NEW high speeds big capacities

fast dumping
unmatched control





This new International 495 Payscraper boils a heaped load into a 24 cu. yd. bowl in less time than any other three-axle scraper in its class and hauls it at speeds up to 29.1 mph. The trailing unit, common to the 295 Payscraper, offers this unmatched combination of features that cut dirt costs: big 131-in. cutting width . . . tapered bowl permits efficient ejection of all materials with equal ease . . . positive forced ejection . . . improved lift frame construction . . . full 90° turns . . . more hp per struck yard than all competitive units . . . wheels and bowl leveling adjustment . . . advanced sheave bearing design . . . and custom designed cable control unit.

Exclusive tapered bowl design: 1) permits scraper and pusher to work inside cut for best traction, less wear on tires, and tracks, 2) causes dirt to boil toward center, reducing side spillage; 3) extra wide bowl bottom provides wider spread, speeds dirt breakaway and lets scraper work cuts against banks.

Positive forced ejection dumps all materials — even wet or frozen clay and gumbo — cleanly and quickly. Six large ball bearing mounted rollers center and guide ejector gate, have 240-hour lube intervals.

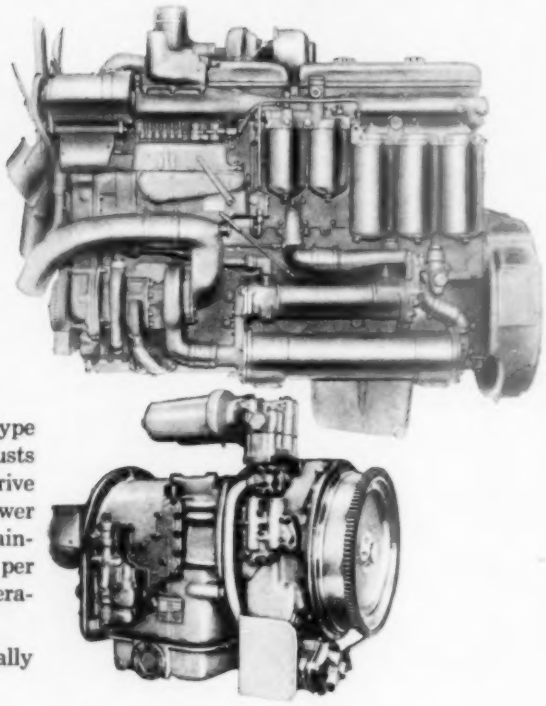
Gaping 98" apron opening plus no bowl cross member permits sure ejection of all materials. Apron opened by exclusive, rear-controlled mechanical linkage. Apron is synchronized with ejector for positive controlled spreading.

24 CU. YD. International 495 Payscraper

Heaped: 31 cu. yd.
Overall length: 50'6¼".

New Turbocharged International DT-817 powers all three giant earthmovers

- Develops 375 hp @ 2100 rpm
- Direct push-button, 24-volt starting
- Positive valve rotators — increase valve life
- Aluminum alloy pistons for fast heat dissipation
- Wet sleeve construction provides additional cooling
- Fully counterbalanced crankshaft for smooth engine performance
- Dual intake and exhaust valves for peak engine efficiency
- Twin plunger injection pump precision meters fuel
- Hang down type replaceable filters for maximum fuel and oil filtering efficiency
- Tri-metal crankshaft bearings for long trouble-free service



Both prime movers are available with 4-speed, planetary type torque converter power shift transmission. It automatically adjusts output torque and speed to fit load requirements. Torqmatic drive makes more power available over the entire range; applies power smoothly and continuously, resulting in less wheel slippage; maintains high tractive effort; and cuts the number of gear shifts per cycle, letting operator concentrate on loading and spreading operations.

A constant mesh 9-speed manual shift transmission is optionally available on both prime movers.

See your International Construction Equipment Distributor for complete information on these NEW International Earthmovers

International® *Construction Equipment*

International Harvester Co. • 180 N. Michigan Ave., • Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheeler Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

HINTS AND HELPS

(Continued from page 72)

Boot drive

WE HAVE SELDOM SEEN the drive of an elevator placed at the boot, or bottom, of the elevator. The big problem, of course, is how to get enough reduction from the motor, and where to place the motor out of the way. The maker of this bucket elevator in Florida solved the problem ingeniously.

The motor is mounted in a nook built into the elevator casing. The shaft mounted reducer is secured right to the casing. This makes a very compact, accessible drive.

The only disadvantages we can think of are the need to climb the elevator to make takeup adjustments and the extra heavy shaft to support both lines of chain and buckets as well as the downward pull of the foot-mounted drive. However, the owner preferred the accessibility of his drive arrangement.

Screen cloth care

MOST OF THE WEAR on a vibrating screen tends to appear at the top, or feed end, and most frequently, in one small area. This area can wear through long before the rest of the screen cloth gets shiny.

When a southern crushed stone producer had this problem with his wet screening operation, he bolted a thin flat plate across the first few inches of the screen. However, the force of water seemed to keep the material from contact with the screen cloth.

Next step was to cut a number of slots in the steel. Now enough water drops out at this point to let the screen do its work, and the perforated plate adsorbs enough impact to prevent premature failure of the first section of the screen cloth.

Pump control

A FLORIDA ROCK PRODUCTS producer seeking stepless control of his dredge-type pump installed a liquid rheostat. He has found that the new control gives smooth, accurate control of the 600-hp. wound rotor motor driving the pump.

Since auxiliary water for cooling is not readily available, the control is air-cooled. The rheostat and its auxiliary equipment are mounted on a skidded housing. The assembly is readily available for inspection and adjustment, if necessary, and can be quickly moved to another location.

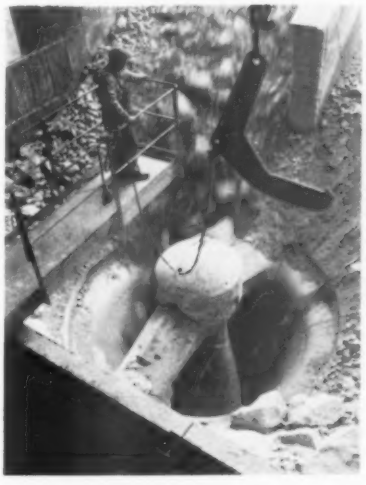
Mobility pays in increased work load for rigs

IN OUR TRAVELS we've seen plenty of tractor shovels doing plenty of rough jobs in rock products producers' plants. Lately though, there have been a surprising number of rubber-tired shovels doing jobs that front-end loaders are not equipped to do.

This southern cement producer has a mobile clamshell unit. It is busy practically all of the time — digging drainage ditches, placing fill, lifting heavy machinery. Here it is emptying a few gondolas filled with a wet, sticky "mud" used to make cement.

The only criticisms we heard: "They should make bigger rigs."

Harpooner's bridge



THIS CRUSHER OPERATOR is ready for anything which might jam the top of a midwestern crushed stone company's gyratory. A flying bridge is cantilevered out over the crusher; a hook hangs high. Both are ready to spear the first rock which jams in the top of the crusher.

The hook, too, was specially designed. An eye in the back of the hook gives the operator better leverage to guide the hook into place in the middle of a rock hang-up.

Dump hopper capacity

WITH PRIMARY CAPACITY in crushed stone plants getting bigger and bigger, into the 1,000-tph. range, it was necessary to get more and bigger haulage trucks. Several new plants discovered to their dismay that they couldn't get their handsome new trucks to the dump hopper fast enough to keep ahead of the primary crusher.

A midwestern rock producer saw this insidious bottleneck. His new plant was designed to let four trucks dump into the primary crusher. The hopper was made big enough to hold the contents of eight or nine trucks, keeping them busy if the crusher is stopped for only a short time. **END**

Power shovel breaks down . . .

So quarry moves boulders with

All over the country, more and more dirtmovers are finding Michigan Tractor Shovels can effectively handle jobs once considered much too tough for rubber-tired equipment.

You've probably read about—or seen—Michigans digging pit-run gravel. Or breaking out reinforced concrete. Or clearing brush. Now here's another dramatic application.

Maintains pit production

The company involved, a large northeastern firm, had always had trouble maintaining pit production when any of their big power shovels broke down. One time this happened, they had a Michigan Tractor Shovel in the pit on demonstration. They decided to put it through the rugged test of rock loading.

Now own six Michigans

That was in 1954. Today, this company owns *six Michigan Tractor Shovels!* In emergencies these units effectively handle both rock loading and cleanup. They also handle *all* truck-loading of screened aggregates and other products of the multi-million-ton crushed stone plant. Management estimates their output "definitely greater" than output of loaders formerly used. Maintenance costs, over periods ranging up to three years, have been "satisfactorily low".

Boulders weigh up to 7 tons each

Note the photos. Above, one of the company's five 2¾ yard Michigan Model 175A's is moving huge boulders to stockpile for later sale as rip-rap. Each chunk weighs ½ to 7 tons . . . yet at no time has operator reported trouble handling them. Upper right, another Model 175A loads shot rock at the quarry face. Michigans' unobstructed dumping height, power shift, and power steer helps speed both emergency assignments.

Load 10 tons in 2 to 3 minutes

Stockpile loading (lower right) keeps the company's

This is the type of shot rock that must be loaded into trucks for transport to crushers. Michigan Tractor Shovels must be able to take a lot of punishment—and they do!

A full bucket every time saves trips, cuts handling costs of loading crushed stone or sand. This load weighed out at 7,000 lbs. This model Michigan can lift 15,000 lbs.

2¾ yard Michigan

2 yard Model 125A and most of the 2¾ yard Model 175A's busy most of the time. Good mobility and unexcelled breakout, *equally great* through the entire lifting arc, make quick work of this job. The Model 125A needs only 3 minutes to heap a typical 10 yard truck . . . the bigger Model 175A's require only 2 to 2½ minutes.

24 mph travel speeds odd jobs

Michigan speed pays off on odd jobs, too. Like cleanup of haul roads, stockpiles, and around crushers. Pushing loaded trucks up grade. Setting utility poles. Hoisting crusher screens and other heavy equipment. Switching railroad cars (up to 25 empties at once). Plowing and removing snow. Despite year-around work averaging 50 hours a week, company officials report "downtime negligible." And continuing, "The all-Clark-built, all-matched power train sure boosts efficiency. From power shift, power steer and 3-to-1 torque converter to planetary wheel drive axles . . . our '54 model has the same components as our newest rig . . . which certainly proves how good the Clark design is. We like the speed of loading . . . the speed between job sites . . . the excellent performance on emergency rock-handling . . . the lack of downtime . . . the ease of maintenance. That's why we've been repeat-buyers five times!"

Make your own test

A demonstration, gladly arranged by your local Michigan Distributor, will show you why you too should be a Michigan Tractor Shovel buyer. Put the demonstrator on your toughest loading jobs . . . we'll bet *our cost* of the demonstration *against your time* you'll really be *enthusiastic* about the results.

Michigan is a registered trade-mark of

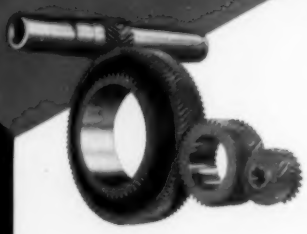
CLARK® EQUIPMENT

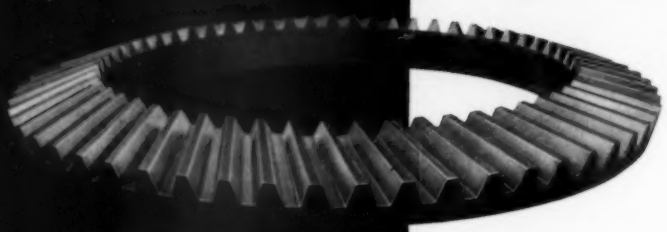
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2481 Pipestone Road
Benton Harbor 42, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

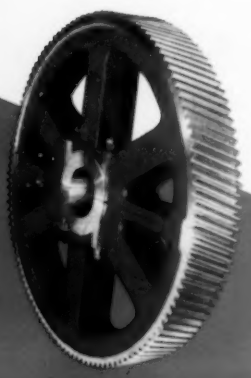
ILLINOIS GEAR has a world-wide REPUTATION

for Dependability and Superiority

. . . Proven by Performance







Back of every ILLINOIS gear is a tradition of dependability and superiority . . . a tradition that has become the priceless ingredient in the minds of men who specify, buy and use gears.

Wherever gears are used . . . the name ILLINOIS GEAR has become symbolic of a reputation . . . a matchless reputation that is known throughout industry and demonstrated by performance in all parts of the world.

If you are not now using or specifying ILLINOIS GEARS we invite you to profit from this background of quality and performance that has established a new concept in gear making.

Look for this mark ILLG® *. . . the symbol on finer gears*

ILLINOIS GEARS

Reg. U.S. Pat. Off.

Gears for Every Purpose ... **one gear or 10,000 or more**

ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS

Where is the cement industry headed?

in: Cement Uniformity, page 83
Manufacturing Processes, page 85
Sales and Marketing, page 86
Concrete Quality, page 88
Merger and Diversification, page 89
Labor and Mechanization, page 90
Professional Managers, page 91
Industry Problems, page 92

THE EDITORS OF ROCK PRODUCTS ARE PROUD TO PRESENT, on the following eleven pages, the results of an extensive and unique survey conducted among cement industry officials this spring. Twenty-one portland cement companies were selected, encompassing a broad range of size and geographical location. Interviews were requested with top officials of these companies, and some very frank questions were asked of these officials about current problems in the cement industry. Many of the companies were answering such questions for the first time; it is remarkable that only one company of the twenty-one refused, at the last minute, to cooperate.

The purpose of the survey was simply to crystallize the thinking of a carefully selected cross-section of cement industry officials on a group of serious industry problems—with the hope that such reporting might be of considerable help to all members of the industry, while also helping other ROCK PRODUCTS readers gain a better understanding of cement producers and their problems.

If we have achieved these results, in even a small way, then we feel that our efforts have been repaid and our function as journalists to better serve our readers has been fulfilled.

The executives who answered our questions were promised anonymity in return for frankness. They gave unstintingly of their frankness—and we, in turn, must respect their anonymity. Only in this way would such an open discussion of issues be possible. ROCK PRODUCTS gives its heartiest thanks to all those who cooperated so magnificently in making this story possible. We hope you will consider the results worth the effort.

The Editors

Any sampling of opinion in an industry as individualistic as cement-making is bound to produce a wide range of views on every subject. What is surprising is the broad areas of agreement that were uncovered by this **Rock Products** survey.

Take the question of cement uniformity. The seriousness of this problem varies considerably from plant to plant, but most cement makers recognize that it is a problem and are vigorously seeking means to solve it.

Most cement producers also are united in an accelerating drive to upgrade plant efficiency. The majority are looking for new and exciting ways to use concrete—and new marketing worlds to conquer.

The need to educate customers in the proper making and handling of concrete was stressed again and again.

The industry expects more mergers, and isn't particularly alarmed at the prospect.

Company officials are disturbed over the prospect of outsiders moving into the cement industry, but they expect little diversification among those presently manufacturing cement.

Labor was singled out as the most difficult problem faced by the industry today. Many companies have instituted intensive training programs to provide skilled workers to handle automated equipment.

Opinion split almost equally on the topic of the trend toward professional managers in the industry. The fact that it was praised, deplored and denied by three nearly equal factions suggests that though cement companies share roughly similar goals, they are resolutely independent in the means they choose to attain them.

Industry leaders aim to achieve cement uniformity.....

THE SERIOUSNESS of the uniformity problem varies considerably among cement plants, but most industry leaders have recognized the problem and are going all-out to solve it. Proper storage and blending offer the best immediate hope, with increasing automation at every possible step in the manufacturing process adding vital assistance. Greater uniformity of product is an important goal in the cement industry; it will be achieved—and quickly.

A few months ago, Stanton Walker and Delmar L. Bloem published a paper through the National Ready Mixed Concrete Association called "Variations in Portland Cement." Their conclusions had the entire industry buzzing—probably because this was one of the few times the subject had been brought out into the open and discussed (quite capably in this instance). Although some of the authors' conclusions were questioned within the cement industry at the time the paper was published, all of the executives interviewed in the ROCK PRODUCTS survey commended the report—and most of them agreed that cement uniformity is, indeed, a problem which needs attention in the industry.

A number of the executives took a different view of the problem, however. While conceding that work needed to be done, they pointed out that what really counts is concrete quality—and that cement variability plays a fairly minor part in concrete uniformity. "The increased emphasis on cement uniformity in the years to come," said one cement company official, "will not come about so much because we have been lax on this in the past, as because concrete is becoming more and more an engineered material in which uniform cement will become even more important."

A few companies interviewed insisted that uniformity is not a problem, and that little or no work is needed in this area of cement manufacturing. Representatives of only two companies took this position inflexibly.

Here are several comments, indicating the wide range of feeling on this subject:

"We think Stanton Walker was dead right in his findings. The industry as a whole has not done a satisfactory job in producing uniform cement. In the long haul this is bound to hurt the sale of cement unless we do something about it."

"Uniformity is one of the most important prob-

"Uniformity of cement is of first importance now, and will be of even greater importance as precasting, prestressing and thin-shell concrete systems are developed and grow in use"

Proper storage and blending offer the best immediate answer

lems before the industry. There is a great need to learn more of the fundamentals involved in the techniques of cement manufacture in order to get at the root of the uniformity problem."

"Uniformity of cement is of first importance now and will be of even greater importance as precasting, prestressing and thin-shell concrete systems are developed and grow in use."

"Cement is increasingly becoming a process product. This business of lack of uniformity is not the cement industry's fault. We think there has been undue emphasis put on strength. Personally, I reject it."

Uniformity can be considered on the basis of strength or volume change and set time. Both are important factors, particularly since the rapid growth in developments like prestressing where greater stresses are required. Whatever importance it had in the past, uniformity will be even more important in the future because concrete is becoming more and more an engineering material.

A majority of the manufacturers agreed that at least a portion of the blame was due the ASTM for cement specifications that are decidedly unrealistic (one manufacturer called them "lousy"). There was disagreement, however, on whether or not ASTM should provide a roof as well as a floor for cement specifications.

One manufacturer said: "Certainly cement quality varies. ASTM specifications are not definitive enough. They don't set a standard—only an inadequate minimum. Manufacturers always exceed the ASTM floor—and sometimes double it. But there is an area of varying quality above that floor. A contractor may test one shipment and find that it is above the norm for a particular job; he then expects every other shipment to reach the same level, although the purchase is made on the basis of the norm established."

Agreeing with him, another producer pointed out: "The specifications for Type II cement according to ASTM are 2,100 psi. Now, no manufacturer goes that low in making his own cement. But if just the floor is raised, it will do no good as far as quality and uniformity are concerned. We feel that there should be a 'roof' in the specs, too. In our own company, we have a self-imposed limit at both top and bottom to help narrow the range of variation in manufacture."

A dissenter had this to say: "We should do whatever it takes to get maximum uniformity, but I'm opposed to putting a ceiling on the ASTM specs. There should be no top on quality."

Uniformity depends to a very large extent on the amount and nature of control equipment within the plant. Some present controls are slow, which makes a constant running check on uniformity difficult.

"We can regulate to get constant adjustments in the stream of materials," said one producer, "but sometimes we don't get results of tests until the next day, which means that adjustments necessary to produce a constant product cannot be made fast enough."

Along this same line, another manufacturer said: "When we get a faster method of control, it will open the door to automation. The one big block is the problem of sampling. We're not getting constancy in sampling and sometimes in testing. We need a sampling device that is quick and accurate. When we get it, we'll be in better shape to realize the maximum benefits from automation. Raw materials vary from hour to hour and day to day, and there's a 3 to 4-hr. lag between discovery of variation and stopping the line to correct the problem."

Time and again, the executives queried emphasized the importance of proper blending and storage as the most available and most immediate answer to the problem of uniformity. One said flatly: "Blending and storage are the whole answer, and when we have them adequately there is no problem of uniformity."

Several companies are making the pursuit of uniformity a primary project in their operations. An outstanding example is a company that has: (1) installed a ball mill at the quarry to reduce everything to ¼-in. size; (2) installed many feeding devices controlled by automatic counters which restrict variation in raw materials to .1 of 1 percent; (3) instituted blending after three raw ball mills and ahead of five tube mills, and again in six slurry tanks ahead of the larger kiln-feed tanks; (4) purchased super-agitating equipment to increase the blending of any material which may have separated in the preceding steps.

There is, of course, an economic limit to what cement companies can do in their quest for uniformity. But this is strictly an individual problem. There are vast and vital differences among raw materials in various parts of the country, and a solution that is perfectly satisfactory in one area might be completely inadequate in another. So there can be no basic rules—beyond the urge to define the problem and set about solving it in the best way possible.

. . . *New automated devices to upgrade plant efficiency*

THE DAY OF THE EVER-LONGER CEMENT KILN is gone in America; many obsolescent cement plants are dying; automation and mechanization are on the increase, and the pace is accelerating; and dozens of devices and processes designed to increase manufacturing efficiency are either in actual use or in the experimental stage.

Cement manufacturing is on the move. An industry which saw relatively little technological change for several decades is now one of the most volatile of all industries. This is the essence of what the 20 cement executives interviewed told ROCK PRODUCTS about manufacturing refinements in the cement industry.

"For years," said one company president, "cement plants have run out of control, turning out a product which was almost invariably far above required specifications. Once we get some of our new control equipment in operation, I think we'll be amazed at the capacity we can get from our kilns."

What direction is this new plant efficiency taking? Here are some of the specifics mentioned by the executives interviewed:

—There will be a continuation of the present trend toward external preheaters or economizers, but their success will depend on ability to operate them without added maintenance or manpower.

—Rapid automatic sampling and oxide analysis of raw materials by such methods as X-ray refraction analysis will grow.

—Automation also will provide speedy calculation of mix requirements and blending control.

—Automatically operated kiln controls will spread. Fineness control for finish grinding may also be handled generally by automation.

—Some potent questions are being asked about the rotary kiln. For example, one respondent said: "The rotary kiln is about 25 percent efficient in the use of heat. It's possible to get a little more efficiency out of a rotary kiln than we are now getting—but not economically. We're going to be taking a closer look at other types of kilns in the years ahead."

The rotary kiln, which has been the powerful undulating backbone of the cement industry since 1892, is coming in for an increased share of attention these days—not all of it friendly. The tendency is to get away from longer and larger kilns by using heat recuperators. The reason for using longer kilns is to reduce fuel costs, but heat recuperators are now doing the job at lower cost.

The whole kiln question is related to fuel costs. There are many indications that we have reached the point of diminishing returns with longer kilns. There was no great enthusiasm displayed over the prospect of enlarging the diameter rather than the length of kilns. More attention was paid to other types of kilns which are now under investigation—particularly the shaft kiln and the Pyzel process. Manufacturers were cautious about commenting on either; their attitude was generally wait-and-see.

One summed up this feeling when he said: "Experiments with other types of furnaces for cement manufacture will continue, but it is extremely unlikely that the rotary kiln will be replaced as long as present types of fuels are used."

In this picture of experimentation and change, the obsolescent cement plants appear doomed. One of the most pressing problems facing industry officials is how much and how far to modernize old plants which will probably never be able to compete successfully in efficiency with new and modern plants.

"We'd rather build a new plant right alongside the old one," said one official. "The old plants soon won't be able to compete because of higher fuel and labor costs and lack of uniformity."

"Mechanization and automation," suggested another executive, "are a constant thing. If you're going to stay in the market, you'll have to keep the old plants up-to-date. If your past program has been wise, you can automate an old plant, although it will never reach the efficiency of a new plant. Only when company policy dictates can a plant go completely to pot."

Some of the thinking ahead gets into real dreamy aspects. A nuclear bed-depth controller is now available, working on the principle of the photo-electric cell. Low-temperature burning processes, in which steam and pressure are used in the carbonization process, are under consideration. Temperatures may be under 1,000 deg. F.—as contrasted with the 2,700-2,900 deg. F. in the rotary kiln. One company is even working on the prototype of a "dream plant."

Precast and structural uses

HIGHWAYS HAVE BEEN REPLACED by precast and structural uses of concrete as the white hope of cement industry officials for a growing share of the construction market in the years ahead. Individual companies will make strong efforts to streamline their sales efforts, emphasize sales planning and tie in local sales with national Portland Cement Association promotions wherever possible. Most cement industry officials are confident that markets will be found for ever-growing cement production.

The cement industry is split almost down the middle on the question of whether or not the promotion and sale of cement is now being explored and exploited aggressively enough. About half of the executives surveyed feel that the PCA is doing an excellent job in precisely the right directions; the other half feel there are some very decided shortcomings in the area of sales and marketing. Specifically, they contend that:

—Sales methods in many cement companies are archaic;

—PCA and industry promotion is being concentrated in the wrong fields of use;

—Concrete promotion should move faster and more aggressively into new markets.

Because of cement overproduction in some areas, sales promotion was close to the heart of many executives.

"We feel that we are never fast enough in exploiting new markets. Look what aluminum and glass are doing to us on exteriors."

"There's too great a lag between the promotion done by PCA and the follow-up by cement companies in their own market areas. Maximum benefit isn't being realized from PCA promotion—both because by its very nature it is so broad and general in character and, also, because local salesmen don't make proper use of national promotion to augment their own local sales approach."

"Many cement company salesmen need a basic change of sales philosophy. There should be more long-range planning and BIG promotion ideas—and less routine calling on a multitude of customers."

One fact emerged head and shoulders above all others in the attitude of cement industry officials toward future markets: The great burgeoning growth in the use of concrete can be expected in the field of structures. Time and again this point was hammered home. Housing rated second in enthusiasm, and the farm market was mentioned almost as frequently as highways. Perhaps this is simply a reaction to the emphasis of the past years on highways. But whatever the reason, cement industry eyes lit up almost universally when structural concrete was mentioned.

Here is a typical comment:

"The greatest potential for expanding cement production is in the precast concrete field. Precast panels, beams and girders of standard sizes for residential as well as commercial construction are distinct possibilities. And

"In the next 10 years there will be 60 to 70 million barrels of cement for new products that are not even conceived now"

afford major growth potential

we're showing great progress in new design theories which make the most of concrete."

Another executive pointed out:

"We have a great potential market in housing—all aspects of it. But it's important that we not limit our thinking to the house. We must think in terms of every aspect of the housing market—things like streets, sidewalks, driveways and shopping centers, among others. All of these things are part of the pattern of new housing, and all of them use a lot of concrete."

Most of the respondents felt that only a small part of the growing market for concrete should be taken for granted as a result of an expanding population and a booming economy. The major increase, they felt, should come through inroads made by concrete—particularly precast concrete—on competing materials.

The growth potential of the major uses of concrete, as summed up by the executives interviewed, shaped up like this:

1. Prestressed and precast products of all kinds.
2. Structural and architectural members, making use of new shapes, surfaces and designs.
3. Paving—particularly for airport runways (to accommodate jet aircraft) and heavy-duty highways.
4. Farm structures, where there will be much change and modernization in the immediate years ahead.

Other growth areas mentioned included the use of soil-cement for secondary roads and the expanding use of all sizes of concrete pipe.

Generally, the feeling toward highways was: We've been beating this dog to death. We'll be getting our share of the highway market; now, let's cast our promotional eyes elsewhere. One official wrapped it up this way: "Over the past few years, highways have been taking more cement, but we don't think this is permanent. As far as we're concerned, the trend ended this year; our company is getting no increase in its share of the highway market this year over last."

Most of the cement company leaders are looking for new and exciting ways to use concrete—and new marketing worlds to conquer. "We feel that in the next 10 years," one executive said, "there will be 60 to 70 million barrels of cement for new products that are not even conceived now."

There was little fear that the industry wouldn't come up with these new markets. A few misgivings were expressed. "PCA is doing a good job—but we must not be complacent. No matter how much we explore new markets, it won't be enough."

One official expressed the philosophy of many of those interviewed when he said: "As long as we can provide the best material at the lowest cost, we'll get a growing share of the market. This is the direction our efforts should take."

. . . *Must educate users in making, placing of quality concrete*

THERE'S STILL A LONG WAY TO GO on the education of cement users in the making and placing of quality concrete—and at least some of this slack is going to have to be taken up by the cement companies, themselves, at the local level.

There is a growing awareness among individual cement companies that PCA simply can't do the job as thoroughly as it must be done. Again and again, the necessity for educating cement users—from the architect to the contractor to the cement producer—was emphasized. But while pointing out this need, some cement company people were also willing to shoulder part of the blame, themselves, for unsatisfactory concrete quality when and if it happens.

Here are the principal factors affecting concrete quality that were most frequently mentioned by those interviewed:

1. Lack of rigid controls on the quality and size of aggregates.
2. Over-mixing and the resultant adding of too much water, which lowers the strength of the concrete.
3. Lack of proper on-the-job inspection.
4. Improper on-the-job workmanship, caused by lack of knowledge of cement and concrete among the workers handling the material.
5. Rapidly expanding needs for aggregates in some areas, causing use of less reliable materials.
6. Variations in cement not compensated for in concrete mixes.
7. Lack of knowledge by contractors and architects of the nature and requirements for making good concrete.
8. Growing lack of pride of workmanship in producing and placing good concrete.
9. Lack of respect among architects and engineers for concrete as an engineering material.
10. Improper finishing and curing.
11. Necessity for more uniform and rigid design and test specifications to provide uniform results.

The ideal way out of this dilemma, it was pointed out several times, is concrete produced in a factory under highly mechanized controls.

"It's terribly wasteful," said one respondent, "to produce 3,800-psi. concrete when only 3,000 psi. is needed. But it would require tremendous mechanization to eliminate this waste entirely—and such equipment would price concrete right out of the market. So the answer—right now at least—must be somewhere in between. We must produce concrete under controlled conditions wherever and whenever possible. Then we must also set out to educate the men who will be working with our material on the job."

Surprisingly, practically none of the cement manufacturers interviewed felt imposed on because of the oftentimes unusual demands made on concrete. "No demand of a customer is unfair," said one producer. "We're in the business to supply the product that the customer wants, if we can possibly give it to him."

One reason for these demands is the rather general concrete construction practice of building to better than specifications. Actually, the product is advancing much more rapidly than the knowledge of the people who are using it. Thus, again, the desperate need for education of cement users.

Several manufacturers considered their own companies partly to blame for deficiencies in this area of education.

"The cement industry," said one, "just hasn't done a first-class job in knowing what it has and in educating customers. We're going to bear down hard on the technical—instead of the coffee and bourbon—approach with our customers. This needs badly to be revitalized at the local level."

Another pointed out: "We've had the water-cement ratio since 1912. How much is it cheated on? Good concrete cannot be poured; it must be placed. We've got to bring that point home. Cement manufacturers are called to task much too frequently when we're not responsible—except very indirectly—for the problem of quality concrete."

Most of the cement executives considered cement uniformity (or the lack of it) but a small factor in the production of uniform concrete. But variations, when they exist, can cause some difficulty with the concrete because there is no provision made for them. Tests are set up before a job starts, then used as a basis for all concrete mixes on that particular job. Although all of the cement used will be well above ASTM specifications, variations in the cement could conceivably cause some inability to meet concrete specifications.

"All we ask," said one cement official fervently, "is that cement users take full advantage of the materials with which they have to work."

Cement industry expects more mergers, little diversification.....

LEADERS IN THE CEMENT INDUSTRY expect to see more mergers and relatively little diversification among companies now manufacturing cement. In general, they aren't alarmed about the mergers, but they are becoming progressively uneasy about diversification in reverse—that is, the invasion of the cement industry by manufacturers specializing primarily in other fields. The gist of this feeling is: We don't think diversification is good for the cement industry, either from inside or outside, because of its high degree of specialization.

Most cement leaders look on at least some further mergers as inevitable. There are two predominant reasons: estate problems in the family-owned companies and the inability of very small companies to keep pace with the technological progress of their competitors. Almost all those interviewed made one emphatic exception, however: the well-managed, adequately-financed and strongly located one-plant company that stays alert and aggressive can probably hold out as an independent indefinitely.

Only those executives whose companies had actually been involved in a merger were downright enthusiastic about the idea. Most of the others accepted it as a sign of the times, while a few could see no good from it at all. These latter opinions, however, were rendered with regard to mergers involving companies with no previous experience in cement manufacturing and marketing.

Seven arguments were repeatedly expressed in favor of merger within the industry:

1. It provides a more uniform income with diversified geographic locations which aren't so sensitive to changing local demands. Thus merger can level out peaks and valleys in cement production and sales.

2. Larger operations can afford specialists in manufacturing, marketing and other areas which make possible production and sales economies.

3. "Depth of management" is possible in merged companies, which can exchange experience, information and even personnel when necessary.

4. Family-owned companies will run afoul of increasingly difficult estate problems, which may likely be resolved by the sale of the company.

5. In a period of growing automation and mechanization, smaller companies will find it more difficult to lay their hands on the capital required for extensive modernization.

6. Assurance of available capital and management depth makes possible both long-range planning and quick competitive moves.

7. Merged companies are able to distribute their overhead over a broader base.

Following are the major points advanced against mergers:

1. A well-located and well-managed one-plant cement company in an industry requiring such heavy capital investment is a virtual gold mine and can stand forever—or at least as long as it remains alert and aggressive.

2. In most mergers, the smaller company is submerged and its identity lost. (American tried specifically to prevent this from happening.) For this reason, the "little guys" will resist to the last ditch being swallowed up.

3. In some instances, a small, well-run independent can actually do a more efficient job of operating than can a large and unwieldy company.

Respondents could find little desirable to say about diversification in the cement industry. They almost unanimously were inimical to the idea of outsiders, manufacturing other products, moving into the cement industry where they don't know their way around. They were only slightly less friendly to the idea of people now in the cement industry diversifying into other products.

Only one manufacturer showed any great enthusiasm for this idea. He said: "There's a substantial opportunity for diversification in by-products, particularly in the design of special cements."

This, however, was a lone voice. The reasons mentioned most frequently for lack of enthusiasm for diversification were:

1. The cement industry would be competing with its own customers if it moved into any area of the concrete business. The only way to prevent this would be to acquire all the usage outlets in a given area, and this would be highly impractical under most circumstances.

2. Diversification would, in many instances, mean getting involved in local competitive situations with which the cement manufacturers are not geared to deal.

3. Portland cement is today a growth industry; therefore it has little need to reach into other fields to expand its potential.

Increased automation changes pattern of labor

THE WHOLE PATTERN OF LABOR in the cement industry is undergoing a slow—but rather thorough—metamorphosis. The reason: increased modernization and mechanization of cement plants. The result: less manpower required per barrel of cement—which, unhappily, is being more than offset by the rising cost of labor and the need for more highly skilled workers.

So far, the change is apparently posing no insoluble problems. Because the industry has been expanding so rapidly in recent years, workingmen have been kept on the job—and labor forces actually increased—in spite of the much higher per-man-hour production rate made possible through automation.

But big and portentous changes are slowly underway in the staffing of cement plants.

"We want our new plant people to be at home in chemistry and electronics," one official said. "But we're going to phase into this without disturbing the people we presently employ."

Over the past decade, the ratio of employes to production has dropped considerably—sometimes as much as 50 percent. But at the same time, the cost of labor per barrel of cement produced has, in some instances, increased because of skyrocketing hourly rates. This makes an especially difficult situation for some smaller companies who have not been able to keep pace with production efficiencies while still having to foot increased labor costs.

Where it's all going to lead is extremely difficult, at this time, to tell. But several facts emerge clearly from an examination of the changes in the cement-industry labor situation now taking place:

—They are, for the most part, coming about slowly and cautiously;

—They are not necessitating the layoff of existing plant personnel;

—The new type of worker needed has, so far, been obtained by either training old employes capable of handling the new equipment or bringing in men with special skills without displacing any present employes;

The economies made possible by mechanization are probably almost wholly responsible for preventing a near-crisis in the cement industry as a result of rising labor costs. When and if mechanization and automation economies come to a halt —even temporarily—and labor costs continue to rise, the problem will become acute.

In some ways, it is already acute.

"Sure I'd like to go to MIT and meet the price for one of their graduates to work for me as a kiln burner," a cement executive said. "I could make it pay out, too. But I can't do it because labor won't let me. I have to pick a man with seniority for this job—a job that requires supervision of a multi-million-dollar piece of equipment."

"We aren't the only industry facing this problem," pointed out another cement company president. "It's happening in dozens of industries all over the nation. Right now, it's impossible to tell where it's going to lead. But one thing is sure: it's putting a new responsibility on our education system to turn out people with a higher intelligence level to work in the automated industry that's surely coming in every field."

Many companies have instituted intensive training programs to provide a pool of skilled workers to handle automated equipment. Supervisors also are receiving rigorous training, and emphasis is being placed on intelligence in the hiring of new workers. These are all signs of the times; they will multiply in the years to come.

Opinions differ sharply on trend toward professional managers...

THERE'S A SHARP DIFFERENCE OF OPINION among cement industry officials on the trend toward professional managers in the industry. Some deplore this trend, some hail it as the salvation of the industry—and some say no such trend exists. The factions espousing each point of view are divided almost equally.

Those supporting professionally trained managers (or "the Harvard Business School boys," as one mild detractor irreverently labeled them) pointed out that this is happening in all industries and is—once again—a sign of the times. It was suggested that business management training is an essential prologue to operating a corporation, with all its complex problems, today. Supporters pointed out that many companies are now sending old-time employes to management schools.

"Besides," said one professional management advocate, "there's too much inbreeding in the cement industry. We need fresh outside viewpoints."

Those who oppose professional management were equally explicit. Their arguments were best summed up as follows:

"Professional managers feel obligated to make more money every year, regardless of circumstances. If they fail to do this for two or three years in succession, they expect to be fired. This results in the wasteful use of assets, frequent price raising and high-pressure campaigns that aren't needed."

The third group simply declines to accept the premise that any trend toward professional managers in the cement industry exists at all.

Said one executive: "We have not observed any noticeable trend toward professional management. Most management employes in the cement industry came up through the ranks."

Another pointed out: "There's no such trend evident. I believe we're in an industry where we're well advised to rely on men who have come up through the ranks because it is such a specialized industry."

No other question in the ROCK PRODUCTS management survey pointed up so clearly the three groups which are emerging in the cement industry of 1959: the small, family-owned company which generally objects to the professional manager; the larger conservative companies which recognize no trend in this direction; and—for want of a better name—the progressives who have hired professional managers to lead them onward and upward.

Some cement industry officials deplore this trend, some hail it as the salvation of the industry, and some say no such trend exists

Labor is the biggest problem facing the industry today

Additional problems, in the order of their frequency of mention, include: percentage depletion and taxation, quality concrete, manufacturing problems, need for new markets, poor customer service, and overcapacity

THE 20 CEMENT INDUSTRY OFFICIALS interviewed by ROCK PRODUCTS mentioned seven different problems as the most difficult faced by the industry today. Here they are—in order of their frequency of mention:

1. Labor
2. Percentage depletion and taxation
3. Quality concrete
4. Manufacturing problems
5. Need for new markets
6. Poor customer service
7. Overcapacity and overproduction

"Labor," said a cement company president, "is the BIG problem, even though it certainly isn't peculiar to our industry but, rather, is a problem of all industry. There is now a decided threat of foreign competition in portland cement because their labor rates are only about one-third of ours. Labor problems—the same ones—keep coming up every year. I don't see any end to them—particularly since they are now somewhat complicated by increasing mechanization."

Comments supporting other choices include:

—"We need accelerated development of new markets for cement and concrete. Let's spend the money to get the answers more quickly—then hire the most intelligent people we can find to go out and acquaint the buying public with the advantages we have for them."

—"The cement industry should get off its backside in doing a job for its customers. There's too much inertia in the industry—too much tendency to refuse to do things just because they've never been done before. We've got to ask more frequently: 'What does the customer want?' "

—"The greatest problem facing the cement industry today is the overcoming of practices in the construction industry which lead to poor performance of concrete."

—"There are now three kinds of cement plants: obsolete; new, modern plants; and those in between. The growing cost of new equipment and the increasing obsolescence of existing equipment makes the future shape of manufacturing facilities an acute problem."

Only two officials mentioned overproduction or overcapacity as a prime industry problem today.

The know-how of cement plant operation

Case history studies of 8 cement plants installed in 1958

THE BRIGHT OUTLOOK for the portland cement industry in the next few years justified the construction of 10 new cement plants in the United States and two in Canada during 1958. Nearly 20 million bbl. of annual capacity was added. This includes the Canadian producers who confidently expect to ship a large part of their output across the border.

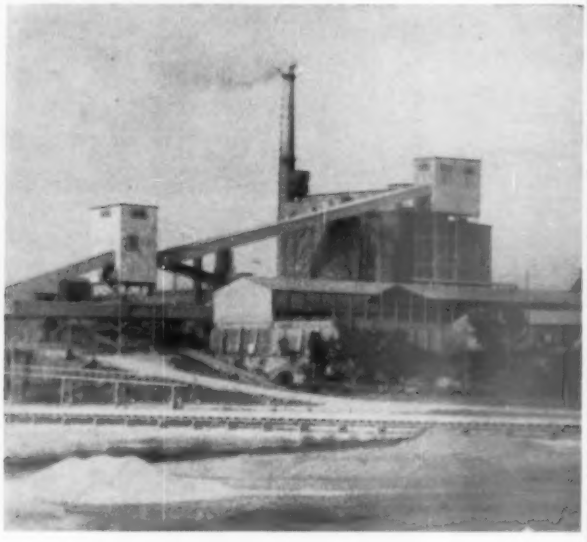
Each of these plants includes high-efficiency, high-capacity equipment. Each plant was designed to process local raw materials to supply a local market in the most economic manner possible.

The following case histories of eight of these plants give a brief summary of the equipment and operational data on a comparative basis. Then each may be compared with the other. Since many of these are just starting up, they have not yet reached full production or full efficiency. The data must be considered to be preliminary for most of them.

The trend toward expansion continues, but at a slower rate. Six completely new plants are scheduled for completion during 1959, and another half dozen for 1960.

Case History Study:

Ultra-modern conversion boosts capacity 50 percent



DURING THE PAST EIGHT YEARS the Monarch Cement Co. has converted an obsolete 8-kiln plant to an ultra-modern plant. The final cost of the 3-kiln dry-process installation was over $12 million, and capacity was upped roughly 50 percent to about 2¼ million bbl. annually.

Careful advance planning of every phase of the conversion was imperative. Intensive training permitted employes to operate new and different types of cement-making equipment as soon as it was installed.

Scale models of existing equipment and of new machinery helped to plan the removal of the old and the rapid, exact placement of the new. Result: less than 72 hr. of production time was lost during the 8-yr. conversion period.

Unusual geology greatly simplified Monarch's materials handling problems. Limestone is brought from the quarry to storage silos over the raw grind mills by a long belt conveyor system. Overburden, which contains the clay and silica ingredients, is hauled to a shale drying process. Then the dried material is taken to storage silos by a belt conveyor system which parallels the cement rock handling system.

Waste heat boilers and generators provide the mill with all its power when operating at capacity. Public utility power is available as a standby.

Cement rock preparation is done in the quarry. Trucks haul blasted rock from the quarry face a short distance to the centrally located gyratory crusher. The crusher reduces rock to minus 6 in. at about 450 tph. A secondary impactor makes, and vibrating screens take out, minus ¾-in. cement rock. The oversize is recycled by a belt conveyor system, while the acceptable material goes to a huge stockpile near the cement plant.

All raw materials are held in a bank of 6 silos above the milling department. Enough cement rock and dried shale is kept ahead of the two raw grind mills to keep them going four days at top capacity. Clinker and gypsum are available in 6 storage silos to keep the two finish mills working about five days.

Materials are metered out of storage by weighing belt feeders and dropped to a belt conveyor. A bucket elevator takes all raw materials overhead to an air separator, and only the oversize goes to a 10½ x 15-ft. ball mill.

The limestone and shale raw materials can be ground exceedingly fine without difficulty. More than 80 percent of the kiln feed is minus 325 mesh, and this is fed to the kilns by an automatic electronic metering system.

Clinker is made in three 11 x 230-ft. kilns. The cooled clinker is taken to the top of the storage silos by a long, inclined belt conveyor system which parallels the raw materials conveyors.

Gypsum, clinker and, if needed, masonry rock are taken out of storage with weighing belt feeders. These feeders discharge to one of two belt conveyors, which takes the cement-making materials directly to one of the two 10 x 28-ft. two-compartment ball mills. In this way, all ingredients make at least one pass through the finish mill. After classification in air-cooled separators, finished cement is dropped into a cooler before it is pumped to a storage silo. Practically all of the plant's output is shipped by rail.

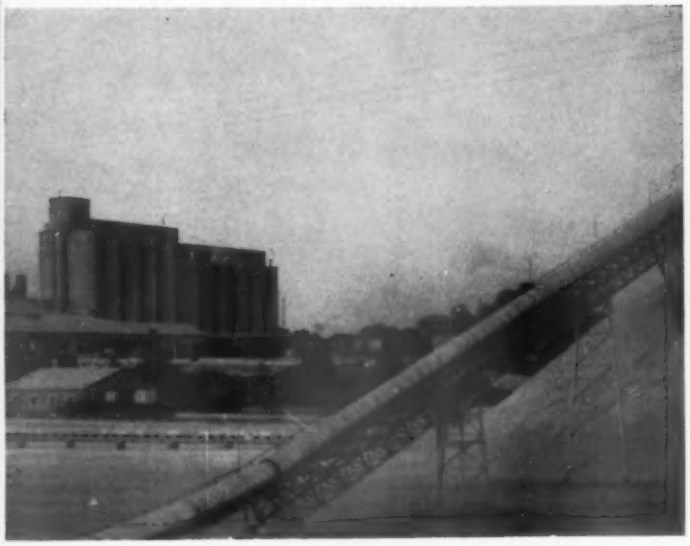
MAJOR EQUIPMENT REFERENCE

In quarry:

Shovels (3) ..... Harnischfeger Corp. (1) 4 cu. yd.; Marion Power Shovel Co. (2) 2 cu. yd.

Dragline ..... Harnischfeger Corp.

The Monarch Cement Company



Trucks, 15 ton (2)	Euclid Div., GMC
Trucks, 25 ton (2)	Dart Truck Co.
Rotary drill	Joy Mfg. Co.
Crusher, 42-65 gyratory	Allis-Chalmers Mfg. Co.
Vibrating screen, 5 x 12	Hewitt-Robins, Inc.
Belt conveyor idlers	Hewitt-Robins, Inc.
Vibrating screen, 6 x 14	Allis-Chalmers Mfg. Co.
Secondary crusher	Pennsylvania Crusher Div., Bath Iron Works
Apron feeder	Pioneer Engineering, Div. of Poor & Co.
Bucket elevator, 12 x 7 c.d.	Chain Belt Co.
Vibrating feeders (6)	Jeffrey Mfg. Co.

In shale plant:

Apron feeder, 5 x 28	Pioneer Engineering, Div. of Poor & Co.
Apron feeder, 3 x 10	Pioneer Engineering, Div. of Poor & Co.
Primary crusher 40 x 40-in.	Hammermills, Inc.
Secondary crusher 18 x 35-in.	Hammermills, Inc.
Shale dryer, 10 x 80	Allis-Chalmers Mfg. Co.
Vibrating screen, 5 x 12	Allis-Chalmers Mfg. Co.
Drag chain conveyor, 18 in. w.	McNally Pittsburg Mfg. Corp.

In cement plant:

Raw materials

Weighing feeders (10)	Merrick Scale Mfg. Co.
Bucket elevators (2) 27 x 11 in. c.d.	Chain Belt Co.
Air separators (2)	Sturtevant Mill Co.
Ball mills, 10½ x 15-ft., and Symetro drives (2)	F. L. Smidth & Co.
Pneumatic conveyors	Fuller Co.
Automatic kiln feed control "cypak"	Westinghouse Electric Mfg. Co.

Clinker

Weighing feeders (8)	Merrick Scale Mfg. Co.
Bucket elevators (2) 27 x 11 in. c.d.	Chain Belt Co.
Air separators (2)	Sturtevant Mill Co.
Cement coolers (2)	F. L. Smidth & Co.
Ball mills, 10 x 28 ft., and Symetro drives	F. L. Smidth & Co.
Pneumatic conveyors	Fuller Co.

Kiln and power department

Kilns (3), 11 x 230	Allis-Chalmers Mfg. Co.
Clinker coolers (3)	Allis-Chalmers Mfg. Co.
Reciprocating trough conveyor 38 in. x 100 ft.	F. L. Smidth & Co.
Clinker breakers (3)	Monarch Cement Co.
Vibrating screen. 5 x 8 ft.	Nordberg Mfg. Co.
Turbine, 9,375 kva.	Westinghouse Electric Corp.
Turbine, 5,000 kva.	General Electric Co.
Waste heat boilers (3)	Babcock & Wilcox Co.
Power plant design	Black & Veatch
Cement plant design & general contractor	MacDonald Engineering Co.

OPERATIONAL DATA

General	
Plant location	Humboldt, Kansas
Plant capacity, bbl./yr.	2,250,000
Type of plant	dry process
Material procurement	produce limestone and shale
Quarrying	
Type drill	6¼-in. rotary
Explosives	Ammonium nitrate and dynamite
Pounds explosive per cu. yd. stone	not available
Footage drilled per shift	250
Loading unit, limestone	4 cu. yd. electric
shale	two 2 cu. yd. electric
Haulage	
Haulage units, limestone	two 25-ton diesel trucks
shale	two 15-ton diesel trucks
Average length of haul, stone	¼ mile
shale	½ mile
Conveyor units, limestone belt conveyors	three, from primary to secondary 630 ft. total; one to surge pile, 800 ft.; five from surge to silos, 1,600 ft.
shale belt conveyors	four to silos, 815 ft.
clinker belt conveyors	two to silos, 642 ft.
Crushing	
Primary crusher, limestone	42 x 65-in. gyratory, 450 tph.
Location	quarry
Crusher product	minus 6 in.
Secondary crusher, limestone	impactor, 450 tph.
Crusher product	minus ¾ in.
Shale crusher	hammermill, 200 tph.
Crusher product	minus 2 in.
Secondary shale crusher	hammermill, 150 tph.
Crusher product	minus ½ in.
Raw grinding	
No. and type of mills	two single-compartment
Size of mills	10½ x 15
Speed, rpm.	19¼
Mill capacity, tph.	55
Proportioning feeders	weighing belt type
Size of mill product	80 percent thru 325 mesh
Product handling	pneumatic handling to storage and to kilns
Burning	
No. and size of kilns	three 11 x 230-ft., 90 tph.
Kiln fed by	rotary feeders
Daily output each, bbl. of clinker	2,200
Fuel used	gas, oil or coal
Dust collecting	mechanical
Clinker cooler	reciprocating grate
Finish grinding	
No. and type of mills	two 2 compartment ball mills
size of mills	10 x 28
Speed, rpm.	18.8
Capacity, tph. Type I	35
Size of mill product	1,750 Wagner
Gypsum added, percent	4
Storage and packing	
No. and type storage units	22 concrete, 250,000 bbl. total
No. and type bagging machines	four, 4-spout

Case History Study:

Use of big machinery improves efficiency

THE SITE OF THIS NEW CEMENT PLANT near the nation's capital was picked after an exhaustive survey of transportation in the marketing area. Alpha Portland Cement Company built its ninth plant at Lime Kiln, Md., within 40 miles of both Washington and Baltimore. It is served by a railroad that can make delivery almost any place in this booming market overnight.

This two-kiln, wet-process cement plant has the capacity to make 2¼ million bbl. of cement annually. The $17½ million installation will be operated by a work force of 140 men. Almost all of these workers were recruited locally, and a high-quality cement is made with high efficiency.

Low construction cost was achieved by the very close cooperation between Alpha and its consulting engineers. All heavy equipment was placed in the most advantageous location on the limestone formation. Crushers and deep foundations were spotted in natural voids as much as possible to reduce blasting and excavation cost. Silos and heavy equipment were placed on solid rock to avoid these seams and voids.

The installation of machinery and cement making equipment was carefully programmed by the engineers and scheduled by the manufacturers. As a result, raw materials were partially processed and stockpiled ahead of the next stage in the process. First cement was produced in June, 1958, shortly after installation of the last equipment.

Dust collection throughout the plant improves efficiency and makes for excellent public relations in the surrounding agricultural community. Cost of this equipment exceeded $1 million, including a mechanical and electrostatic dust collector system on the kilns. Every source of nuisance dust—crushers, screens, mills and packaging plant— is protected with mechanical dust control equipment.

Efficiency is improved with the use of big machinery throughout the new plant. Five big haulage trucks are loaded by a pair of 2½-cu. yd. shovels, one at each quarry face. A 48 x 60-in. primary jaw crusher reduces plus 4-in. quarry rock at the rate of 450 tph. before sending it to a secondary impactor. This unit makes a minus ¾-in. cement rock with a maximum amount of minus 50-mesh fines.

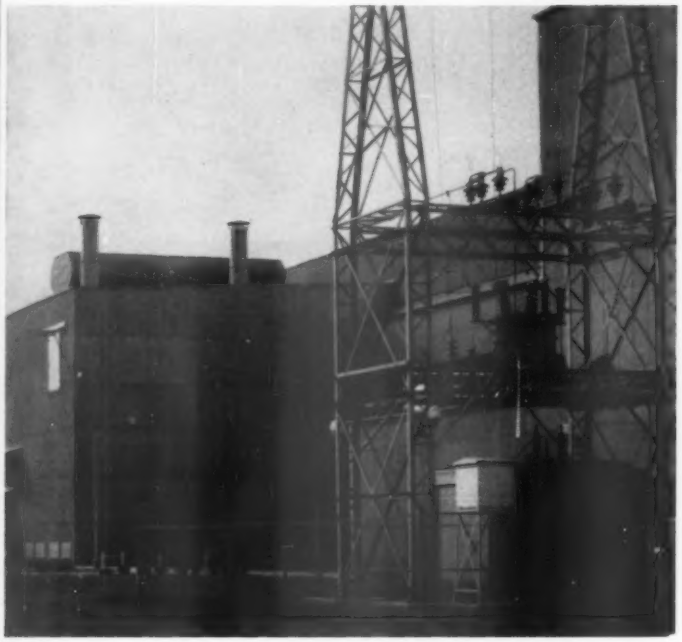
Each of the two 9 x 37-ft. raw grind mills is supplied by an oscillating conveyor that gathers the raw materials from feeders under the storage silos.

Each kiln is 11¼ x 400 ft. and is driven by a dual drive at a rate between 30 and 90 rph. Concrete piers close to the ground permit ready access to trunnions, drives and tires for inspection and maintenance.

Cement-making efficiency is increased by re-use of some of the dust picked up in the kiln dust collectors. Either mechanical or electrostatic dust can be introduced into the stream of slurry going to the kiln. Either dust can be withdrawn from a storage bin and trucked to waste if there is an unwanted accumulation.

Plenty of storage capacity for each type of cement adds to the over-all efficiency of the new plant. About 300,000 bbl. of cement are held in 18 silos. The cement shipping operation is one of the fastest in the country, backing up the plant's

Alpha Portland Cement Company



efficient transportation advantage. Three covered gondolas or three trucks can be loaded at one time, while 12 types of cement are ready for immediate shipment.

MAJOR EQUIPMENT REFERENCE

In quarry:

Shovels, 2½ cu. yd. (3)	Marion Power Shovel Co. (2); Harnischfeger Corp. (1)
Pan scraper, 21 cu. yd.	Euclid Div., GMC
Trucks, 15-ton end dump (8)	Euclid Div., GMC
Bulldozers (3)	Allis-Chalmers Mfg. Co.
Drills (4)	Gardner-Denver Co.

In cement plant:

Crusher, 48 x 60-in. jaw	Traylor Engineering & Mfg. Co.
Vibrating feeder	Syntron Co.
Vibrating grizzly	Syntron Co.
Crusher, 17 x 45 impactor	Pennsylvania Crusher Div., Bath Iron Works
Belt idlers	Hewitt-Robins
Motors	Allis-Chalmers Mfg. Co.
Ball mills	Allis-Chalmers Mfg. Co.
9 x 35 ft. (3)	Allis-Chalmers Mfg. Co.
9 x 37 ft. (2)	Allis-Chalmers Mfg. Co.
Kilns, 11¼ x 400 ft. (2)	Allis-Chalmers Mfg. Co.
Reciprocating plate feeders	Link-Belt Co.
Oscillating conveyors	Carrier Conveyor Corp.
Weighing feeders	Hardinge Co., Inc.
Clinker coolers (2)	Fuller Co.
Pneumatic conveying systems	Fuller Co.
Coal mills (2)	Combustion Engineering, Inc., Raymond Div.
Overhead cranes, 4 cu. yd. (2)	Harnischfeger Corp.
Screw conveyor system	Continental Gin Co.
Dust collectors, mechanical (4)	The Northern Blower Co.
Dust collectors, mechanical (5)	The W. W. Sly Mfg. Co.
Dust collectors, mechanical (2)	Research-Cottrell, Inc.
Dust collectors, electrostatic (2)	Research-Cottrell, Inc.
Slurry tank mechanisms (8)	Dorr-Oliver, Inc.
Plant design and construction	Macdonald Engineering Co.

OPERATIONAL DATA

General	
Plant location	Lime Kiln, Md.
Plant capacity, bbl./yr.	2,250,000
Type of plant	wet
Raw material procurement	produce limestone, sand; purchase iron ore, coal, gypsum, and high calcium limestone
Daily consumption limestone, tons	1,830
Quarrying	
Type drills	four, crawler mtd.
Explosives	dynamite
Footage drilled per shift	500
Loading units	two, 2½-cu. yd. electric shovels
Haulage	
Haulage units	five 15-ton diesel trucks
Average length of haul	¼ mile
Average No. of round trips per truck per shift	35
Conveyor units, belt	four, 650 ft. total
Conveyor service	primary crusher to secondary to mill storage
Crushing	
Primary crusher	48 x 60-in. jaw, 450 tph.
Location of crusher	cement plant
Size crusher product	minus 4 in.
Secondary crusher	17 x 45 impactor
Size crusher product	minus ¾ in.
Raw grinding	
No. and type of mills	two three-compartment ball mills
Size of mills	9 x 37 ft.
Speed of rotation, rpm.	18
Mill capacity, tph.	45
Proportioning feeders	reciprocating plate for stone; weighing belts for ore and sand
Size of mill product	84 percent minus 200 mesh
Product handling	pumps to slurry storage; pumps to kiln feed tanks
Burning	
No. and size of kilns	two 11¼ x 400-ft., 60 rph.
Kiln fed by	ferris wheel
Fuel used	coal
Fuel used per bbl. clinker	96 lb.
Dust collecting	mechanical and electrostatic
Clinker coolers	6 x 37 horizontal grate
Finish grinding	
No. and type of mills	three, three-compartment ball mills
Size of mills	9 x 35 ft.
Speed of rotation, rpm.	18
Capacity, tph.	26.5
Size of mill product	3,400 Blaine
Gypsum added	3.8 percent
Storage and packing	
No. and type of storage units	18 concrete silos; three, 4-compartment shipping silos
Capacity, bbl.	300,000 in storage
No. and type bagging machines	three 4-spout
Percent bagged	16
Method of shipping	100 percent rail
Crews and productivity	
No. men in quarry	28
No. men in cement plant	112
Tons limestone per quarry man-hr.	12
Bbl. cement per man-hr.	7.4

Case History Study:

This plant serves a small, compact market

WHEN A DOZEN ENTERPRISING MEN in Mississippi saw a small, compact market for cement in western Mississippi, Arkansas and Louisiana, they banded together to build a cement plant to serve this area. The new plant of Mississippi Valley Portland Cement at Redwood is in an ideal location to ship cement to the market extending about 75 miles on both banks of the Mississippi River from Natchez to Memphis.

Their site near Vicksburg includes about 700 acres of limestone and marl land. It is on the Yazoo River and near a major railroad. The cement plant is a single-kiln, wet-process installation, and its capacity of about 680,000 bbl. a year was designed to supply the specific demand of the market.

The enterprise was originally limited to investors in the state. But now there are more than 6,100 stockholders in four southern states who have put up more than $5 million to build the new plant.

Raw materials are found in a 30-ft. banded marl and limestone deposit of the Vicksburg formation. The marl contributes the necessary iron, alumina and silica, and also a substantial amount of lime. Marl and limestone are separated by washing after the material has been crushed to minus 9 in. in the 30 x 72-in. single-roll primary crusher. The washing unit is the second installation of its kind in the American cement industry. Marl slurry is ready for adding to the limestone in the raw grinding mill.

Limestone is reduced in two additional crushing operations. From the wash mill it goes to a gyratory crusher to be reduced to minus 2-in. A 42 x 48-in. hammermill makes the final reduction to minus 1-in. A 24-in. belt conveyor system takes limestone from the quarry to a surge pile ahead of the hammermill in the cement plant area.

A belt conveyor system serves the milling department. Limestone and clinker storage piles are served by the same belt conveyor which handles these materials alternately to surge bins ahead of each mill.

Milled raw slurry is stored in one of eight storage tanks. When checked and balanced, slurry is taken to one of the two kiln feed tanks ahead of the kiln.

The single kiln is 10 x 400-ft. It is set up to burn natural gas but can burn oil as a standby fuel. Clinker drops from the kiln to a 10 x 60-ft. rotary cooler which reduces the temperature to about 100 deg. F. A belt conveyor system takes the clinker to a two-compartment outside storage area above the reclaim belt conveyor system. The mild climate of western Mississippi eliminates the need for covered storage for either raw materials or clinker.

About 60,000 bbl. of finished cement can be stored in the six concrete stave storage silos. At the moment, only Type I and Type Ia cement are made; but other types may be made to suit the needs and specifications of customers.

Mississippi Valley Portland Cement Company

Finished cement will be shipped entirely by truck for the first few months. However, the new plant is on the Yazoo River, giving it access to the Mississippi River navigation system.

MAJOR EQUIPMENT REFERENCE

Quarry:

Shovels (2)	Bucyrus-Erie Co.; American Hoist & Derrick Co.
Drill	Joy Mfg. Co.
Trucks (2)	LeTourneau-Westinghouse Co.

Cement plant:

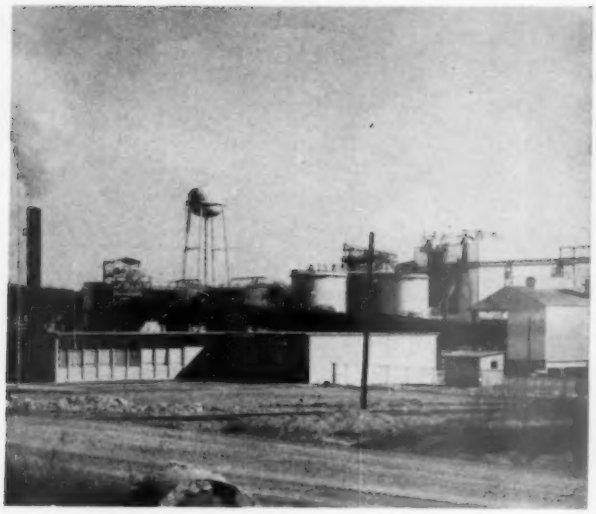
Primary crusher, 30 x 72-in. roll	Pennsylvania Crusher Div.
Secondary gyratory	Kennedy-Van Saun Mfg. & Engr. Corp.
Apron feeder, 4 x 20-ft.	
Vibrating screens (2) 5 x 12-ft.	
Kiln, 10 x 400-ft.	
Cooler, 10 x 60-ft. rotary	
Raw grind mill, 9 x 28-ft.	
Finish mill, 11x18-ft.	
Clinker crusher, 42 x 48-in. Hammermill	
Pneumatic conveying system	
Plant design	
Slurry tank equipment	Dorr-Oliver, Inc.
Weighing belt feeders	Merrick Scale Mfg. Co.
Belt conveying system	Mississippi Foundry & Machine Co.
Drag chain conveyor	Mississippi Foundry & Machine Co.
Concrete stave silos, stack	The Neff & Fry Co.
Dust collectors	Western Precipitation Corp.; Buell Engineering Co.; The Northern Blower Co.
Air separators, 16-ft.	Sturtevant Mill Co.
General contractor	M. T. Reed Construction Co.

OPERATIONAL DATA

General	
Plant location	Redwood, Mississippi
Plant capacity, bbl. per yr.	680,000
Type of plant	wet
Raw material procurement	produce limestone, marl
Daily consumption, tons	limestone 260; marl 340
Quarrying	
Drill	wagon, 4½-in. diam. hole
Explosives	ammonium nitrate
Lbs. explosives per cu. yd.	.56
Footage drilled per shift	n.a.
Loading units	2½-cu. yd. diesel dragline
Haulage	
Haulage units	two 15-cu. yd. diesel trucks
Avg. length of haul	⅛ mi.
Avg. number round trips per unit per shift	20
Conveyor units	two 24-in. belt conveyors, 500 ft. total length
Conveyor service	primary crusher to washer, and secondary crusher to rock storage
Crushing	
Primary crusher	30 x 72-in. roll, 275 tph.
Location	quarry
Primary crusher product	minus 9 in.
Secondary crusher	No. 14 gyratory, 150 tph.
Location	quarry
Secondary crusher product	minus 2 in.
Tertiary crusher	42 x 48-in. hammermill
Location	cement plant
Crusher product	minus 1 in.
Raw grinding	
No. and type mills	one, 2-compartment tube mill
Size of mill	9 x 28-ft.
Speed of rotation, rpm.	19.3
Mill capacity, tph.	45
Proportioning feeders	dry, belt type; marl slurry, ferris wheel
Size of mill product	85 percent minus 200-mesh
Product handling	slurry pumps to 8 holding tank, 2 kiln feed tanks
Burning	
No. and size of kilns	one, 10 x 400-ft., 50 to 70 rph.
Kiln fed by	ferris wheel
Daily kiln output, bbl. clinker	2,000
Fuel used	natural gas
Fuel per bbl. clinker	1.5 million cu. ft.
Dust collecting	mechanical
Clinker cooler	10 x 60-ft. rotary
Finish grinding	
No. and type mills	one, 2-comp. tube mill
Size of mill	11 x 18-ft.
Speed of rotation, rpm.	16.9
Capacity, tph.	25
Size of mill product	98 percent minus 200 mesh
Gypsum added	four percent
Storage and packing	
No. and type storage silos	six concrete stave
Capacity each, bbl.	10,000
No. and type bagging machines	one, 3-spout
Percent bagged	n.a.
Method of shipping	truck 100 percent

Case History Study:

Flexible plant incorporates new design features



TWO FACTORS GOVERNED THE CHOICE of Foreman, Ark., as the site of the new 1.4-million-bbl. wet-process cement plant of Arkansas Cement Corp. It is in a four-state primary marketing area —Arkansas, Louisiana, Oklahoma and Texas— that has a great deal of general construction activity and a very attractive sales potential. Secondly, there are ample supplies of cement-making raw materials, with plenty of natural gas available through Arkansas Cement's parent company, Arkansas Louisiana Gas Co.

The new plant went into production in December, 1958. It incorporates many new design features which result in a flexible, efficient and low-cost installation. Initial investment is less than $8 per barrel of annual capacity, and the single-kiln plant is operated by a crew of 90 men.

Source of a major economy is the quarry operation. It is not necessary to drill and blast the soft limestone chalk. Instead, a bulldozer with ripper bars plows up the stone, which is then hauled to the dump hopper in a 33-cu. yd. self-loading pan scraper. Overburden supplies the clay and silica for cement making; it is stripped and hauled by the pan scraper.

Raw materials handling is simple and effective. A hydraulic ram in the bottom of the clay hopper automatically feeds clay to a wash mill, eliminating a man and a crane for this service. The soft chalk is reduced to minus 1½ in. in one pass through the primary crusher. This eliminates a secondary crusher, screens and recycle conveyors.

Two 9½ x 36-ft. mills are in the milling department. One is used for finish grinding and the other as a swing mill for either raw or finish grinding. The swing mill is required for raw grinding about half the time. This permits the kiln to operate at top capacity at all times, with the clinker sent to storage. During peak demand periods, the two mills can convert the clinker to finished cement at a high rate.

Outdoor storage of clinker in the mild Arkansas climate permits a saving in the cost of a storage building. A large amount of clinker is put into an open stockpile. A reclaim tunnel and conveyor system brings clinker back to the mill building.

Close control of the raw grinding process adds to the over-all economy of the new plant. Clay slip is metered by a magnetic flow meter and monitored by a nuclear density measuring device. The plant chemist uses these instruments to adjust the proportion of each component going to the raw mill.

Chalk and clay samples are taken continuously as they go to the mill. The analyses of these samples are checked against the analysis of material in the slurry tank receiving the ground raw materials. Adjustments are made in the feed of raw material if necessary to change the composition of the finished slurry. When the tank is full it has exactly the right analysis for kiln feed. This eliminates the need for mixing tanks and a separate kiln feed tank and gives a high degree of quality control.

Natural gas is used to generate very economical electric power for the cement plant. Three 2,640 kw. generators are each driven by a 3,750 hp. natural-gas engine to meet all electricity needs.

Arkansas Cement Corporation

Natural gas also fires the 12 x 450-ft. kiln. Standby burning equipment permits oil firing if the supply of natural gas should be curtailed, and an auxiliary gasoline engine can supplant the 200-hp. motor driving the kiln.

Mechanical dust collectors collect stack dust and return it to the kiln. The hot clinker is discharged from the kiln to a 7 x 44-ft. inclined grate cooler and reduced to about 150 deg. F. before it is sent to storage.

Each grinding mill is fitted with a bag-type dust collector. A water spray system and an electrostatic dust collector are part of the equipment of the finish grinding mill.

MAJOR EQUIPMENT REFERENCE

Cement plant:

Washmill, Ball mills (2) 9½ x 36-ft., Kiln, 12 x 450-ft., Kiln controls and panel, Cement cooler	F. L. Smidth & Co.
Primary hammermill	Pennsylvania Crusher Div.
Weighing belt feeders (2), Belt conveyors, Car puller	Link-Belt Co.
Weighing belt feeder (1)	Jeffrey Mfg. Co.
Clinker cooler 7 x 44-ft., Air slides	Fuller Co.
Belt conveyors	Coastal Plains Supply Co.; Continental Gin Co.
Bucket elevators	Continental Gin Co.
Air separators	Combustion Engineering, Inc.
Plant motors, Electric generators (3) 2,640 kw.	Westinghouse Electric Co.
Gas engines (3) 3,750 hp.	The Cooper-Bessemer Corp.
Storage silos	Rust Engineering Co.
Truck and rail scales	Fairbanks, Morse & Co.
Plant design and construction	Kaiser Engineers, Div. of Henry J. Kaiser Co.

OPERATIONAL DATA

General

Plant location	Foreman, Ark.
Plant capacity, bbl./yr.	1,400,000
Type of plant	wet
Raw materials procurement	produce limestone and clay, buy iron
Quarrying	ripping and stripping

Haulage

Haulage units	33-cu. yd. self-loading pan scraper
Average length of haul, round trip	2,000 ft.
Conveyor service	quarry dump hopper to stockpile to primary crusher

Crushing

Primary crusher	reversible hammermill
Location of crusher	plant
Size crusher product	minus 1½ in.
Secondary crusher	none required

Raw grinding

Number and type of mills	one 2-compartment ball mill
Size of mill	9½ x 36 ft.
Proportioning feeders	completely controlled system of belt-type units fed by vibrating feeders and table feeders
Size of mill product	95 percent or better through 200 mesh
Product handling	5-in. pump moves to one of two slurry tanks
Motor horsepower	1,500

Burning

Number and size of kilns	one 12 x 450 ft., 24 to 78 rph.
Kiln fed by	ferris-wheel type feeder
Fuel used	natural gas
Dust collecting equipment	mechanical
Clinker cooler	inclined-grate type

Finish grinding

Number and type of mills	one 2-compartment ball mill
Size of finish mill	9½ x 36 ft.
Motor horsepower	1,500

Storage and packing

No. and type of storage units	8
No. and type of bagging machines	two 4-spout
Method of shipping	rail and truck

Crews and productivity

No. men in plant	90

Please turn to page 106

New 19 and 27

- 375 and 250 hp engines
- 30% less body weight
- 14% faster haul speeds

NEW "95" Payhauler

STRUCK: 18 cu. yd. PAYLOAD: 27 tons

The new Model "95" Payhauler moves payloads faster and for less money than any 27-ton rear dump with cycle-speeding 375 hp under the hood and elimination of all free-loading body weight.

Here's why the new "95" earns more for you:

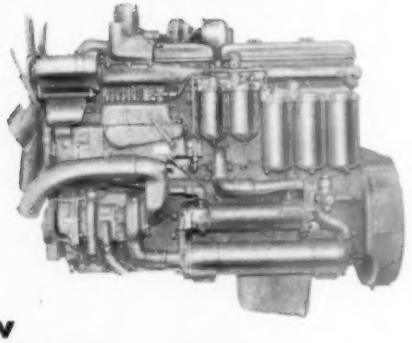
New 375 hp turbo-charged International diesel engine plus rugged yet tons-lighter corrugated body gives best power-to-weight ratio of all similar rigs, helps move payloads 14% faster on all grades both up and down.

Speeds to match all loads and roads with choice of torque-converter with powershift, or 9-speed, constant-mesh transmission. Haul speeds to 38 mph.

Faster reversing, up to 7.1 mph with gear-drive model speeds spotting or positioning for dumping.

Load-speeding safety and unequalled operating ease with power steering, torqmatic braking, and full-sweep vision.

11-second dumping with exclusive inverted hoist action and industry-topping snubber mechanism.



Great new 375 hp and 250 engines

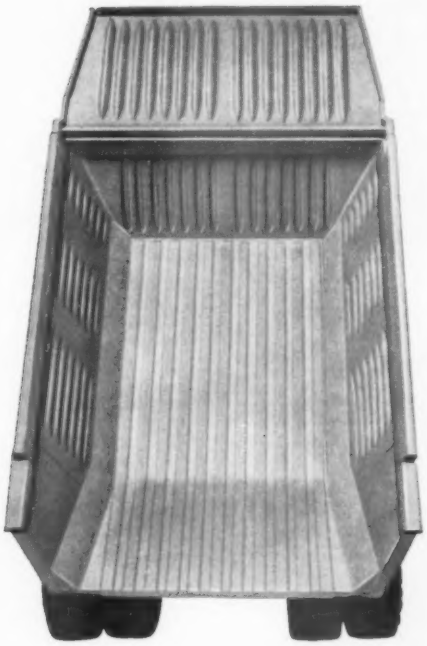
Both Payhauler models have a big power plus under the hood. The "95" is powered by this all-new International DT-817 375 hp turbo-charged diesel while the "65" is powered by the same basic engine, the naturally aspirated D-817, that develops 250 dependable low cost hp. Both are heavy-duty, high-speed, direct-start, 4-cycle, 6-cylinder models thoroughly proved in six years of development and testing. Both are products of 26 years of International experience building heavy-duty diesels for rugged applications.

— ton Payhauler® models

NEW "65" Payhauler **STRUCK: 12.5 cu. yd.** **PAYLOAD: 19 tons**

The new Model "65" Payhauler sets new performance standards as the only 19-ton off-highway truck on the market...new 250 hp naturally aspirated International diesel engine...best power-to-weight ratio...new rock-ribbed body with tons less deadweight...10-speed constant-mesh transmission that helps bonus power speed more paydirt...speeds to 36.37 mph...and cab comfort and safety features that let the operator keep his mind on his work rather than on truck controls.

For a refreshing experience in what's new in rear dumps, invite your International Construction Equipment Distributor to bring either Payhauler to your job for a showdown demonstration against your present haulers.



Biggest body improvement in 25 years

International corrugated quarry and standard bodies are the industry's biggest body improvement in 25 years. Corrugated panels—with triple the strength of conventional flat steel plates—cut body weight 30% in sides, front, canopy, and subfloor at no reduction in strength or protection to operators. Loads being dropped onto the body wear floor are cushioned by up to 26 corrugations in the sub-floor. Patent applied for heated bodies have no cold spots, create no damaging exhaust back pressure. Benefit: haul payloads without hauling up to 5000 pounds of free-loading steel each cycle.

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carburated Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

"We've used International TD-24's on our job continuously for three years," reports Bobby Ikerd, for Ikerd and Bandy, Inc., Manchester, Ky. "Our first '24' has worked over 8,000 hours. We get good production with exceptionally long track life. Live track turning, planetary steering features, combined with hydraulic dozer, gives us a faster stripping operation in mountain terrain—plus operator safety advantages." Their 24's strip 30-foot earth-shale-rock overburden on 100-foot maximum push. Right: One of their "24's" rolling up production!

PLANET POWERED "24's" *hit stripping cost squeeze...with*

"Planetary steering enables the TD-24 operator to cut more high-wall yardage per day, as live power on both tracks pulls out full dozer blades on a continuous move," declares Supt. Ken Ellis, Ford Mining Co., Charleston, W. Va. "The decelerator offers better tractor control. Our older TD-24 still has the same track system after 7,000 hours of work. Service like this sold us on our new '24.'" To support a coal-augering operation, their TD-24, shown, faces up to 300 lineal feet of bench daily—cutting a maximum depth highwall of 30 feet, in hard shale and sandstone.

"Our year-old '24,' stripping overburden, and working in mud, sand, and gravel along the creek bed, keeps well ahead of the dragline," states Supt. C. G. Hendry, for Dallas Sand and Gravel Co., Inc., Selma, Ala. "Our TD-24 track life (they've owned three '24's') runs a good one-third longer than competitive crawler owners are getting around here." The company produces fluxing gravel, road rock, pea gravel, and sand for industrial and construction uses.

"live" track steering...long track life!

"The TD-24 planetary steering design combined with the torque-converter has greatly reduced tractor maintenance in our type of operation," reports R. D. Baughman Coal Company, Brookville, Pa. "Live power on both tracks enables the operator to push larger loads, always keeping the dirt rolling regardless of terrain conditions. My operators especially like TD-24 ease of control." The Baughman Company strips up to 40 feet of shale, sand rock, and clay overburden from a 5-foot seam of coal.

See what's behind TD-24 ability to outdoze same-sized competitors, as much as 50%—and to give up to one-third greater track life than other makes, especially in tough conditions! See how exclusive Planet Power steering keeps paydirt on the move—doesn't spill your "extra profit" margin—eliminates "dead-track drag" in turns. Prove what it means to increase stripping production efficiency and cut upkeep with "24" capacity. See your International Construction Equipment Distributor for a demonstration.

International® Construction Equipment

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Case History Study:

Historic plant site marks new dry process operation

WHEN MEDUSA PORTLAND CEMENT CO. needed to expand production, it did so at the site of one of the historic plants in the cement industry. Wampum, in the Beaver Valley of western Pennsylvania, has been producing cement since 1874. Medusa has been there for the last 30 years.

The new dry-process plant has a capacity of about 2½ million bbl. and draws upon a quarry about 2½ miles away for raw materials. There the Vanport limestone outcrops in the canyon of the Beaver River. Part of the shale overburden is used in the cement making process as is pea gravel from another part of the property.

Limestone and shale are prepared at the quarry for cement mills, with stone and shale passing through the crushing and screening system alternately. A fleet of three trucks hauls material from the quarry, dumping into a feeder above a 48 x 60-in. jaw crusher. All material passes through the primary crusher to a 48-in.-wide vibrating conveyor which feeds the impactor secondary crusher. Capacity of the primary crusher is about 450 tph. of run-of-quarry limestone.

Crushed materials are taken to a pair of vibrating screens, and all plus ¾-in. stone is recycled to the secondary crusher. Through-screen materials drop to a belt conveyor which takes them about 600 ft. downhill to a truck loading station. There the shale is stored in a 150-ton steel bin, with the limestone kept in a 30-ft.-diam. concrete silo holding about 900 tons of rock.

Stone and shale are taken 2½ miles to the cement plant in a fleet of eight 20-ton tractor-trailer units with bottom dumping gates. The truck dump hopper and the rail dump hopper are side by side. Each discharges to a belt conveyor system designed to take incoming materials to storage. Coal and gypsum are brought in by rail.

There are twelve 30-ft.-diam. concrete storage silos before the mills, with four tanks for stone, four for clinker storage, two for gypsum and one each for gravel and shale. Coal is conveyed to one of a pair of 500-ton steel storage silos above the firing end of the kilns. The silos are arranged in four rows of three, and each row serves a ball mill. Crossover conveyors are arranged to send shale and pea gravel to either raw grind mill.

Constant weight feeders draw materials out of the silos and deposit them on an oscillating conveyor. A bucket elevator lifts all materials to be milled to air separators which remove finished fines from the raw feed. The mills grind only the oversize from these separators. Two 11½ x 17-ft. single-compartment ball mills with 1,250-hp. motors grind the raw materials. Two 13 x 16-ft. single-compartment ball mills with 1,500-hp. motors make finished cement.

Kiln feed is pumped to one of four homogenizing tanks and fed to one of the two 12 x 390-ft. coal-fired kilns by a screw feeder system. Pulverized coal is blown into each kiln from a bowl mill. Hot exhaust gases are cooled to about 650 deg. F. with water sprays and passed through electrostatic dust collectors. All dust is collected and returned to the kiln feed elevators. Hot clinker is dropped to an inclined grate cooler, crushed and sent to finish department and to storage by belt conveyor.

Finished cement is stored in 24 concrete storage silos holding a total of about 264,000 bbl. or in a four-silo group holding another 109,000 bbl. of

Medusa Portland Cement Company

finished cement. Bagged or bulk cement can be shipped by truck or by rail, and a new pack house will be the last stage in the complete modernization of this cement plant.

MAJOR EQUIPMENT REFERENCE

In quarry:

Shovels, (2) 2½ cu. yd.	Manitowoc Engineering Corp.
Drills, (2) wagon	Gardner-Denver Co.
Trucks, (3) 15-ton diesel	Autocar Div., White Motor Co.
(8) tractors	White Motor Co.
Trailers, (8) 20-ton	Truck Engineering Co.
Crusher, 48 x 60-in. jaw	Allis-Chalmers Mfg. Co.
Apron feeder, 5 x 18-ft.	Stephens-Adamson Mfg. Co.
Impactor	Crusher Engineering Co.
Vibrating conveyor, 4 x 15-ft.	Hewitt-Robins, Inc.
Vibrating screens, (2) 5 x 12-ft.	W. S. Tyler Co.
Belt conveyors, (3)	Barber-Greene Co.

In cement mill:

Weighing feeders, (14)	Jeffrey Mfg. Co.
Oscillating conveyors, (6)	Carrier Conveyor Corp.
Belt conveyors, (5)	Barber-Greene Co.
Bucket elevators, (10)	Chain Belt Co.
Ball mills, raw, (2) 11½ x 17-ft. Ball mills, finish (2) 13 x 16-ft. Kilns, (2) 12 x 390-ft.	Allis-Chalmers Mfg. Co.
Clinker coolers, (2) 7 x 41-ft. Pneumatic conveyors	Fuller Co.
Air separators, (4) 16-ft.	Raymond Div., Combustion Engr.
Electrostatic precipitators	Research-Cottrell
Screw conveyor systems	Materiel Handling & Equipment Co.
Dust collector, (4)	Northern Blower Co.
(3)	The W. W. Sly Mfg. Co.
(1)	Parsons Engineering Corp.
Shipping scales, (3)	Fairbanks-Morse Co.
Sub-stations & switchgear	Westinghouse Electric Corp.
Plant layout and design	W. R. Bendy Cement Engineers Osborn Engineering Co.
General contractor	Standard Steel Service Inc. The Mellon-Stuart Co. The Nicholson Company, Inc.

OPERATIONAL DATA

General	
Plant location	Wampum, Pa.
Plant capacity, bbl./yr.	2,500,000
Type of plant	dry
Raw materials procurement	limestone, shale, gravel. Purchase coal, gypsum
Daily consumption of limestone, tons	2,000
Quarrying	
Type drills	wagon, 1¾ and 2-in.
Explosives	40 percent dynamite
Stripping	by contractor
Explosive, lb. per ton rock	¼
Loading units	two 2½-cu. yd. diesel shovels
Haulage	
Haulage units	three diesel trucks, 15 tons each (quarry); eight tractor-trailers, 20-ton
Average haul to crusher	½ mi.
Average haul to plant	2½ mi.
Conveyor units	three, total length 600 ft.
Conveyor service	recycle and downhill to truckloading silos
Crushing	
Primary crusher	jaw, 48 x 60 in.
Location	at quarry
Size crusher product	6 to 8-in.
Secondary crusher	impactor
Size crusher product	minus ¾-in.
Raw grinding	
No. and type of mills	two, single compartment ball mills
Size of mills	11½ x 17 ft.
Speed of rotation, rpm.	17.3 rpm.
Mill capacity, tph.	55
Proportioning feeders	weighing belt
Size of mill product	87 to 91 percent minus 200 mesh
Product handling	pneumatic conveyors from air separators
Burning	
No. and size of kilns	two 12 x 390-ft.
Kiln speed, rph.	20 to 80
Kiln fed by	screw conveyor feeders
Daily output, bbl. of clinker	3,600
Fuel used	coal
Fuel per bbl. of clinker	85 lb.
Dust collector	electrostatic
Clinker cooler	7 x 41-ft. inclined grate
Finish grinding	
No. and type of mills	two, single compartment ball mills
Size of mills	13 x 16 ft.
Speed of rotation, rpm.	16.25
Capacity, tph.	35.72
Size of mill product	3,000 to 4,000 Blaine
Gypsum added, percent	4
Storage and packing	
No. and type of storage units	twenty-four concrete, 264,000 bbl.; four concrete, 109,500 bbl.
Bagging machines	seven, 4-tube
Percent bagged	36
Percent shipped by rail	10
Percent shipped by truck	54
Crews and productivity	
No. men in quarry	8
No. men in cement plant	121
Tons of limestone per quarry man-hr.	43.7
Bbl. of cement per cement mill man-hr.	29.7

Please turn to page 110

KENNEDY SERVES

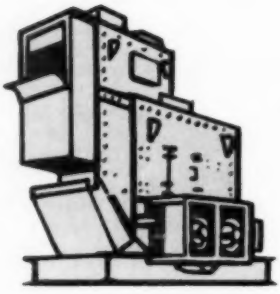
LAKE ONTARIO PORTLAND CEMENT COMPANY

This unique plant at Picton, Ontario, manufactures 1.8 million barrels of cement annually and also produces 750 tph of graded aggregate, either independently or concurrently with the cement operation. KENNEDY VAN SAUN designed and furnished all of the crushing and grinding machinery as well as the principal cement producing equipment for this plant.

KENNEDY Gearless Gyratory Crushers

1—48" Primary—at the quarry.
1—20" Intermediate—in the crushing building.
2—#49½ Tertiaries—in the crushing building.
1—37½ Clinker Crusher—after the kilns.

KENNEDY Impact Crushers



2—36" x 48" Senior Cubers—in the crushing building.

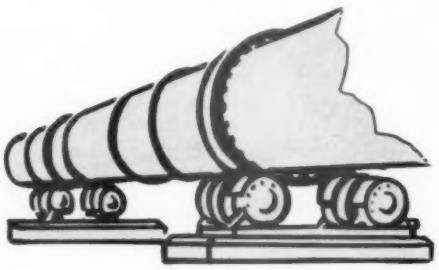
KENNEDY provides the *most complete* cement plant service to be found anywhere. KENNEDY knows cement manufacture; KENNEDY maintains a staff of cement specialists; KENNEDY designs and manufactures the finest in cement manufacturing machinery.

Send for more information on these services and equipment. For the complete story on the Lake Ontario Portland Cement Co., ask for Bulletin 59-B.

Primary & Secondary Gyratory Crushers • Jaw Crushers • Roll Crushers • Impact Breakers • Hammer Mills • Rod & Ball Mills • Kilns • Dryers • Screens

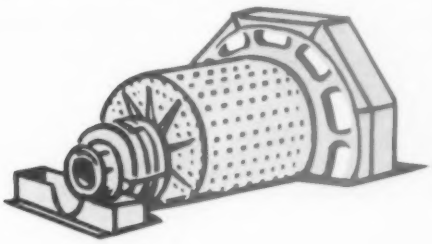
KENNEDY Dryer and Kilns

1—10′ x 50′ Clay Dryer.
2—10′ x 375′ Dry Process Cement Kilns.



KENNEDY Ball Mills

1—11′ x 20′ 2-compartment Raw Mill.
1—11′ x 20′ 2-compartment Raw/Finish Mill.
2—11′ x 20′ 2-compartment Finish Mills.



KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

• Mechanical & Pneumatic Conveyors • Complete Crushing, Lime, Cement & Carbon Paste Plants. KENNEDY Research & Testing Service.

Enter 1069 on Reader Card

Case History Study:

Basic plant design permits future kiln additions

THE CEMENT INDUSTRY in British Columbia is now well prepared for the next burst of construction activity. The new wet-process cement plant of Lafarge Cement of North America Ltd. will swell the province's cement making capacity by about 1½ million bbl. annually.

This $16 million installation is on Lulu Island in metropolitan Vancouver. With complete dock equipment, it is in a strategic position to ship to Canadian ports on the Inner Passage. Should any cement shortage develop in the Puget Sound area of the United States, Lafarge is in a very favorable position to send barges of cement into this market.

All the accumulated know-how of 125 years of cement making went into the design of the new plant. Much of the equipment in the oil-fired single-kiln plant was built in Europe and shipped by sea from France to western Canada. The parent company, Lafarge Cement of France, has supplied cement for both the Suez and Panama canals. Other Canadian and European investors have a substantial interest in this cement-making enterprise.

Raw materials come into the new plant by water. Limestone is quarried on Texada Island, 80 miles north in the Straits of Georgia, where there is enough limestone for 200 years of operation. A 3,500-ton self-unloading barge brings minus ¾-in. cement rock to the dock at Lulu Island, where it discharges to a belt conveyor system for the trip to storage. Other unloading equipment at the dock can unload conventional barges or ships bringing limestone or other bulk materials to the plant.

Clay is brought down the Frazer River from a vast deposit at Matsqui, 25 miles from Vancouver. This deposit has reserves for 150 years of operation. Because it is virtually impossible to handle this heavy, sticky clay economically in bulk form, it is reduced to a slurry at the clay pit. This slurry is much more easily handled, and it is nearly at a consistency to be pumped into the first stage of raw materials processing. A 1,200-ton barge hauls the slurry down river to the new plant, where it is pumped to storage tanks.

Limestone and clay slip is reduced to kiln-feed slurry in a three-compartment ball mill. The kiln is 12¼ x 426 ft., an oil-fired unit burning Bunker C oil at 275 deg. F. and 425 psig. pressure. The basic design of the plant permits three more kilns to be added, and allows for all kilns to be equipped for standby gas and coal burning.

Cement from the finish grinding mill is conveyed to storage in a pneumatic conveyor of European design. Cement is dropped into a large pressure vessel and is discharged into the conveyor system by high pressure air. About 150 tph. can

Lafarge Cement of North America, Limited

be conveyed in this way. The cycle is automatic.

Cement to be shipped in bulk can be loaded into a truck or rail car at about 340 bbl. per hr., while barges can be loaded at about 700 bbl. per hr. Nearly half of the plant's output is shipped by water.

MAJOR EQUIPMENT REFERENCE

Shovel, 71B, 3-cu. yd.	Bucyrus Erie Co. of Canada Ltd.
Rotary drill, 6¼-in.	Joy Mfg. Co. (Canada) Ltd.
Trucks, 63 TD, (2) 22-ton	Euclid Div., General Motors of Canada Ltd.
Primary crusher, 60 x 48-in. jaw	Canadian Allis-Chalmers Ltd.
Secondary crusher, 48 x 36-in. jaw	Canadian Allis-Chalmers Ltd.
Vibrating screens, (2) 5 x 16-ft. (1) 5 x 12-ft.	Canadian Allis-Chalmers Ltd.
Impactor, 17 x 50-in.	Pennsylvania Crusher Div.
Belt conveyors, apron feeders	Stephens-Adamson Mfg. Co. of Canada Ltd.
Ball mill, 9½ x 36-ft.	F. L. Smidth & Co. of Canada Ltd.
Kiln, 12¼ x 426	F. L. Smidth & Co. of Canada Ltd.
Ball mill, 9½ x 34	F. L. Smidth & Co. of Canada Ltd.
Control panel	F. L. Smidth & Co. of Canada Ltd.
Clinker cooler	Fuller Co.
Compressors (5)	Fuller Co.
Cement pump	Fuller Co.
Dust collectors	Northern Blower Co., Buell Engineering
Electrostatic precipitator	Ventilation Industrielle et Miniere
Air separators	B. F. Sturtevant Co. of Canada Ltd.
Pneumatic conveyors	Fluidor
Slurry tank machinery	Dorr-Oliver-Long Ltd.
Overhead crane and bucket	Applevage
Plant design	Ciments Lafarge de France

OPERATIONAL DATA

General	
Plant location	Vancouver, B.C., Canada
Plant capacity, bbl. per yr.	1,500,000
Type of plant	wet
Raw materials procurement	produce limestone, clay; purchase shale, tailings, gypsum
Daily consumption, tons	limestone 1,100, clay 100, tailings 120
Quarrying	
Type drill	rotary, 6¼-in. hole
Explosives	Forcite 75 percent
Lb. explosives per cu. yd.	.7
Footage drilled per shift	120
Loading unit	diesel, 3 cu. yd.
Haulage	
Haulage units	two 22-cu. yd. diesel trucks
Average length of haul	¼ mi.
Average No. of round trips per truck per shift	32
Conveyor units	eight 42-in. and 36-in. belts; 1,140 ft. total length
Conveyor service	crushers, hopper to barge loading
Crushing	
Primary crusher	60 x 48-in. jaw, 550 tph.
Location	quarry, Texada Is.
Primary crusher product	minus 15 in.
Secondary crusher	48 x 36-in. jaw, 250 tph.
Secondary crusher product	minus 7 in.
Hammermill	17 x 50-in., 400 tph.
Hammermill product	minus ¾ in.
Raw grinding	
No. and type of mills	one 3-compartment ball mill
Size of mill	9½ x 36 ft.
Speed of rotation, rpm.	18.8
Mill capacity, tph.	65
Feeders	weighing belts
Size of mill product	90 percent minus 170 mesh
Product handling	eight slurry pumps
Slurry tanks	four 40-ft., two 80-ft.
Burning	
No. and size of kilns	one 12¼ x 426-ft.
Kiln fed by	ferris wheel
Daily output of clinker	800 tons
Fuel	oil
Amount fuel used	abt. 15½ percent by weight of clinker
Dust collecting	electrostatic only
Clinker cooler	reciprocating grate
Finish grinding	
No. and type of mills	one 2-compartment
Size of mill	9½ x 34-ft.
Speed of rotation, rpm.	18.8
Capacity, tph.	35
Size of mill product	3,000 to 3,100 Blaine
Amount of gypsum added	4.8 percent
Storage and packing	
Number of storage units	eight steel silos
Capacity of each	1,200 tons
Number and type bagging machines	three
Percent of product bagged	55
Method of shipping	45 percent, water; 43 percent, truck; 12 percent, rail
Crews and productivity	
No. men in quarry	22
No. men in cement plant	90
Tons limestone per quarry man-hr.	10
Bbl. cement per man-hr.	4.5

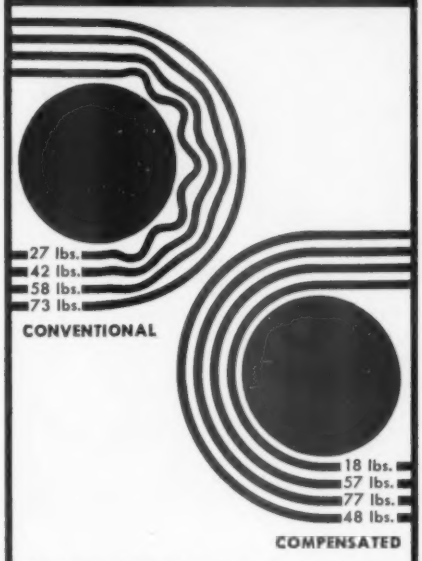
Please turn to page 114

RAY-MAN CONVEYOR BELT
Lasts Longer on Tough Hauls

R/M engineering makes the difference with Ray-Man Conveyor Belt. Cushioned strength members give it the resiliency to take the impact of shock loading . . . the flexibility to train better, trough naturally. Balanced *Double*-Compensation relieves outer ply stresses, prolongs belt life under the most rugged operating conditions. R/M's exclusive "XDC" Cover gives Ray-Man extra protection against wear, tear, cuts and abrasion never before possible.

Ray-Man Conveyor Belt is rip resistant. It requires no breaker strip . . . holds fasteners far better than other constructions. Like all R/M heavy duty conveyor belts, Ray-Man is both moisture resistant and mildew-proof. Let an R/M representative show you the engineered advantages of Ray-Man Conveyor Belt and other R/M constructions . . . extra-cushioned Homocord for unusually severe shock loading . . . R/M Tension-Master for extra long lifts, high tensions. Write for Bulletin M302.

STRESS-RELIEF OF OUTER PLIES MEANS LONGER BELT LIFE... "More Use per Dollar"



CONTROLLED PLY ELASTICITY

Note how Double-Compensation at right equalizes ply stresses.

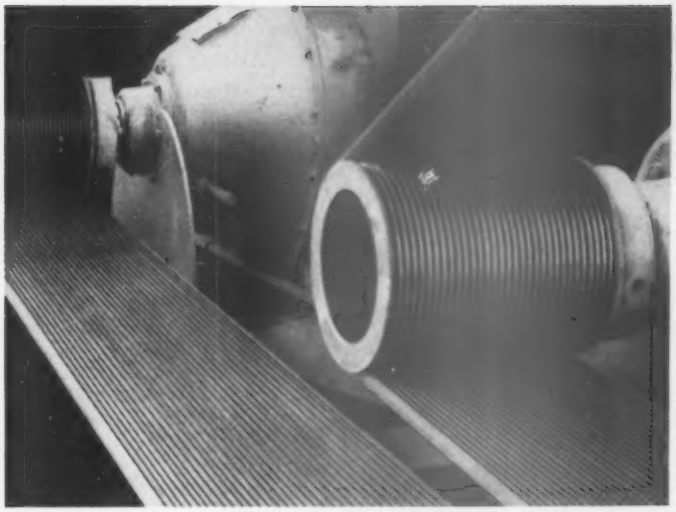
1. Center plies on neutral axis and better protected carry more load.
2. Outer plies stress-relieved by adjusting to tension and compression.

INDUSTRY'S *ONLY* COMPENSATED BELT

Ray-Man Compensation relieves outer ply stress . . . allows outside ply to elongate more than inner plies as the belt flexes around the pulleys. Inner plies no longer "loaf", but carry full share of the load.

Outer ply is better able to absorb strain and impact of loading, pull as a strength member, *protect* the inner plies, hold fasteners or splice longer.

And, because Ray-Man is *double Compensated*—both top and bottom plies stress-relieved—Ray-Man Compensation prolongs belt life, even where operated over reverse bend, snub or take-up pulleys!



R/M POLY-V® DRIVE—*MORE* POWER IN *LESS* SPACE

A single unit belt across full width of the drive sheave . . . not an assembly of V-belts . . . gives patented Poly-V twice the tractive surface to deliver up to 50% *more* power in the same space as a V-belt drive — or *equal* power in ⅔ the space! Multiple-belt "matching problems" are eliminated . . . equipment downtime and belt replacement costs reduced to a minimum. Poly-V assures constant belt speed ratios from no load to full load to provide the smoothest and coolest running—longest wearing drive for your heavy duty power driven equipment. Just two Poly-V* belt cross-sections meet every requirement! Write for Bulletin M141.

*Poly-V is a registered Raybestos-Manhattan trademark. Patented.

HOMOFLEX HOSE—HANDLES EASIEST ON THE JOB

R/M's exclusive construction for air, water, other fluids and gases is as flexible as a rope! Homoflex Hose has no pre-set twist . . . coils and uncoils freely in *any* direction — *without* kinking. Light in weight, yet strong enough to stand up under the toughest conditions, Homoflex is the easiest handling hose made for rugged general service. Inseparable tube-to-cover bond greatly increases hose life . . . reduces hose costs! Uniform inside and outside diameters make Homoflex easier to couple, too . . . assure fuller, faster flow on every job.

Only R/M offers exclusive Homoflex Construction. Write for Bulletins M694 and M610.

RMD1B

BELTS • HOSE • ROLL COVERINGS • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls

Enter 1056 on Reader Card

Case History Study:

Lake-edge plant supplies two rich markets

THIS NEW CEMENT PLANT takes advantage of its strategic location and superlative natural resources to serve two rich markets for cement and for crushed stone. Lake Ontario Portland Cement Co. Ltd. at Picton, Ont., uses economic water transportation to bring cement to company-owned distribution plants in Toronto, Ont., and Rochester, N.Y.

The $16 million, two-kiln, dry-process plant has a capacity of about 1,650,000 bbl. (U.S.) annually and, in addition, can process about 1½ million tons a year of merchant crushed stone. The new plant is right at the edge of deep water in a sheltered harbor. Cement or aggregate carrying boats can be fully loaded and trimmed at the plant for the short haul to markets.

The island location of Prince Edward County is astride the shipping lanes of the newly opened St. Lawrence Seaway. Eventually, the marketing area can be expanded to include American and Canadian Great Lakes ports, the Atlantic seaboard and foreign ports. The deep water wharf permits inbound supplies of coal and gypsum by boat.

Lake Ontario's new plant has been in operation since April, 1958, but already improvement and expansion has been scheduled. New stone washing equipment will make a dust-free, premium grade stone. Additional screens will improve the accuracy of aggregates sizing, while rock ladders under the huge storage towers will reduce degradation. Dust contamination of aggregates will be eliminated with the installation of a new dust collection system in the secondary crushing department.

This crushing and screening plant has a capacity of about 600 tph., with about 200 tph. of output going to the cement plant. Cement rock and collected dust is a "free" by-product of the aggregates preparation system. Raw material is taken from the 550 acres of limestone owned by the company. This should last for more than a century at existing production capacities.

Cement is made by two 11 x 375-ft. coal-fired kilns. Each is supplied with dry-ground raw materials through a recirculating system. One 11 x 20-ft. two-compartment ball mill grinds raw materials, with a second unit available for either raw materials or clinker grinding. At the moment only limestone and sandy clay are put into the raw mix, but a clay processing system is available to grind and dry local clays.

Hot clinker is handled on an oscillating conveyor from an inclined grate cooler until it is cool enough to be handled on a belt conveyor. Then a belt conveyor system takes the clinker to a screen and to storage.

Clinker is ground in one of two 11 x 20-ft. two-compartment ball mills or in the swing mill used for raw grinding. Just as in the raw grinding circuit, all materials are first put through air classifiers to remove all minus 200 mesh fines. Then, only the oversize is sent to the mills to be ground and then recycled.

Finished cement is stored in one of four 15,000 bbl. pack house storage silos or in one of the two 20,000 bbl. silos at the ship loading dock. Boats are loaded through two loading towers, each equipped with two pneumatic loading spouts. A boat the size of the 17,500-bbl. SS. Glen El can be loaded in about 8 hr. This vessel was converted to a self-

Lake Ontario Portland Cement Company, Limited

unloading boat by the Canada Steamship Lines Ltd. for the purpose of handling cement shipments from the new plant.

MAJOR EQUIPMENT REFERENCE

Quarry:

Shovels, 5-cu. yd. electric ..... P & H Harnischfeger Corp.
Trucks (4) 22-ton rear dump ..... Euclid Div., GMC
Drill ..... Canadian Ingersoll-Rand Co.
Belt conveyor and stacker ..... Jeffrey Mfg. Co., Ltd.
Primary gyratory crusher, 48-in. ..... Kennedy-Van Saun Mfg. & Engr. Corp.

Screening and storage plant:

Belt conveyors, Vibrating feeders (5) 4 x 6 ..... Jeffrey Mfg. Co., Ltd.
Vibrating screens (6) 5 x 12, (4) 5 x 14, (2) ..... The W. S. Tyler Co. of Canada, Ltd.
Vibrating screens (8), 5 x 14 ..... Thomas A. Dillon
Impact crushers (2), 36 x 48, Gyratory crusher 20-in., Gyratory crushers (2) type 49½ ..... Kennedy-Van Saun Mfg. & Engr. Corp.

Cement plant:

Belt conveyors ..... Jeffrey Mfg. Co., Ltd.
Overhead cranes (2) 13- & 10-ton ..... Provincial Engineering, Ltd.
Clay dryer, 10 x 50 ..... Kennedy-Van Saun Mfg. & Engr. Corp.
Raw mills (2) 11 x 20 ..... Kennedy-Van Saun Mfg. & Engr. Corp.
Bucket elevators (5) ..... Jeffrey Mfg. Co., Ltd.
Pneumatic conveyor systems ..... Fuller Co.
Kilns (2) 11 x 375 ..... Kennedy-Van Saun Mfg. & Engr. Corp.
Clinker coolers (2) ..... Fuller Co.
Clinker conveyor, 36 in. x 75 ft. oscillating ..... Link-Belt Ltd.
Clinker crusher, gyratory ..... Kennedy-Van Saun Mfg. & Engr. Corp.
Finish mills (2) ..... Kennedy-Van Saun Mfg. & Engr. Corp.
Finish mills elevators (2) ..... Jeffrey Mfg. Co. Ltd.
Kiln dust collectors ..... Buell Engineering Co., Inc.
Ship loading system ..... Fuller Co.
Mill and silo dust collectors ..... The Northern Blower Co.
Engineers and architects ..... Burns & Roe of Michigan, Inc.
Construction ..... Johnson Drake & Piper, Inc., and H. J. McFarland Construction Co. Ltd. as Cement Plant Constructors

Please turn to page 118

OPERATIONAL DATA

General	
Plant location	Picton, Ont., Canada
Plant capacity, bbl. per yr.	1,650,000
Type of plant	dry
Raw material procurement	produce own limestone, clay, sand
Daily consumption raw materials, tons	1,500 cement plant; 4,000 aggregate plant
Quarrying	
Type drills	three wagon, one pneumatic; 6-in. holes
Explosives	70 percent dynamite
Face	65-ft.
Loading unit	5-cu. yd. electric shovel
Haulage	
Haulage units	four 22-ton diesel trucks
Haul, round trip	½ mi.
Avg. No. round trips per hour per unit	7½
Conveyor units	two 42-in. belts from primary to stockpile, 500 ft. total
Crushing	
Primary crusher	48-in. gyratory
Location of crusher	edge of quarry
Primary crusher product	6¼ in.
Secondary crusher, cement rock	two 36 x 48-in. impactors
Secondary crusher product, cement rock	minus ¾-in.
Conveyors	six units 2,750 ft. total handling cement rock; eleven units 2,800 ft. total for aggregates
Raw grinding	
No. and type of mills	two, 2-comp. ball mills
Size of mills	11 x 20-ft.
Speed of rotation, rpm.	18
Mill capacity, tph.	60
Proportioning feeders	belt type
Size of mill product	90 percent minus 200 mesh
Product handling	120 tph. pump to storage; 120 tph. pump from storage to kiln feed
Burning	
No. and size of kilns	two 11 x 375-ft.
Kiln fed by	bucket elevator constant level box and tubular screw feeders
Daily kiln output, bbl. of clinker each	2,500 to 3,000
Fuel	bituminous coal
Fuel used per bbl. clinker, Btu.	800,000 to 900,000
Dust collecting	mechanical
Clinker cooling	6 x 40-ft. inclined grate
Finish grinding	
No. and type of mills	two, 2-compartment ball mills
Size of mills	11 x 20-ft.
Speed of rotation, rpm.	18
Cap. of each, bbl./hr.	160
Size of mill product	3,000 Blaine
Gypsum addition, percent	4 to 5
Storage units	4 plant silos; 2 dock silos
Capacity of each	15,000 bbl. each plant silo; 20,000 each dock silo
Bagging machine	one 4-spout
Percent bagged	10
Methods of shipping	80 percent, water; 10 percent, rail; 10 percent, truck
Crews	
No. men in cement plant	100
No. men in quarry	11
Men in aggregate plant	14
Tons of limestone per quarry man-hour	52
Bbl. of cement per man-hr.	7.5

Big-yardage Macks gave us a big jump in

"Here's how we *really* jumped hauling capacity with hardly any increase in costs," says Quarry Superintendent A. L. Moody of Chattanooga Rock Products Division of Vulcan Materials Co.

"We installed a larger shovel, a 4½-yard unit, and backed it up with three Mack dumpers. Our production has been 'way up ever since.

"Performance? Just about perfect in the 20 months we've had the big-yardage Macks. Four or five fast passes fill 'em up. They haul our heaviest loads—even up grades of 14%—with no strain at all. The truck cycle rate has remained steady—in good weather and bad. The drivers tell us that these Macks are amazingly easy to handle for their size. And there's been minimum shop time, no parts replacement of any consequence since we put them on—despite the fact that these trucks are absorbing the abuse of 58 loadings and dumpings per 9-hour shift."

Big and Tough . . . But Easy to Handle. For smooth, easy response, 30-ton Mack LRSW's feature air-assisted clutch and power steering. For smooth power transfer, they offer overgear transmission with two-speed compound or torque converter. For all-weather, all-terrain traction, they feature the exclusive Mack Balanced Bogie with Power Divider. Best materials, precision manufacture and specially engineered components make the LRSW capable of the toughest 'round-the-clock hauling.

hauling capacity

More and more quarry operators are going to the larger-capacity trucks. But the bigger the truck, the more important its strength, stamina and operating economy become. Ask your Mack branch or distributor for the names of users who'll tell you that *nothing* can approach a Mack in these departments. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

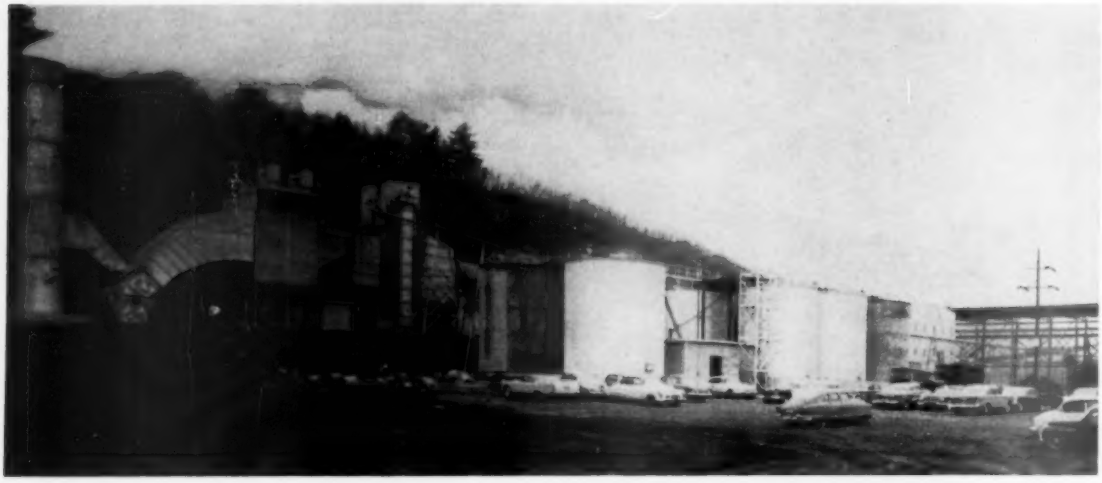
MACK

FIRST NAME FOR

TRUCKS

6514

Case History Study: Hudson Cement Company

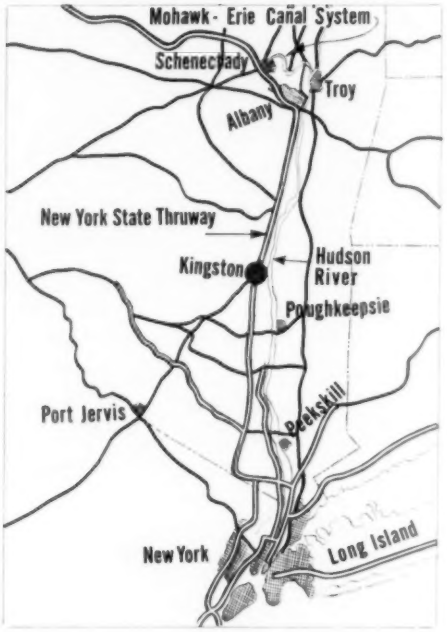


European design influences new wet process plant

THE HUDSON CEMENT COMPANY completed a single-kiln, wet-process cement plant at Kingston, N.Y., during 1958. Annual capacity of the new plant is reported to be in excess of 800,000 bbl. and cost more than $3,750,000. Much of the low cost can be attributed to the use of cement making equipment designed and fabricated in Europe. The 350-acre tract has enough limestone, clay and shale for more than 75 years of operation of the new plant.

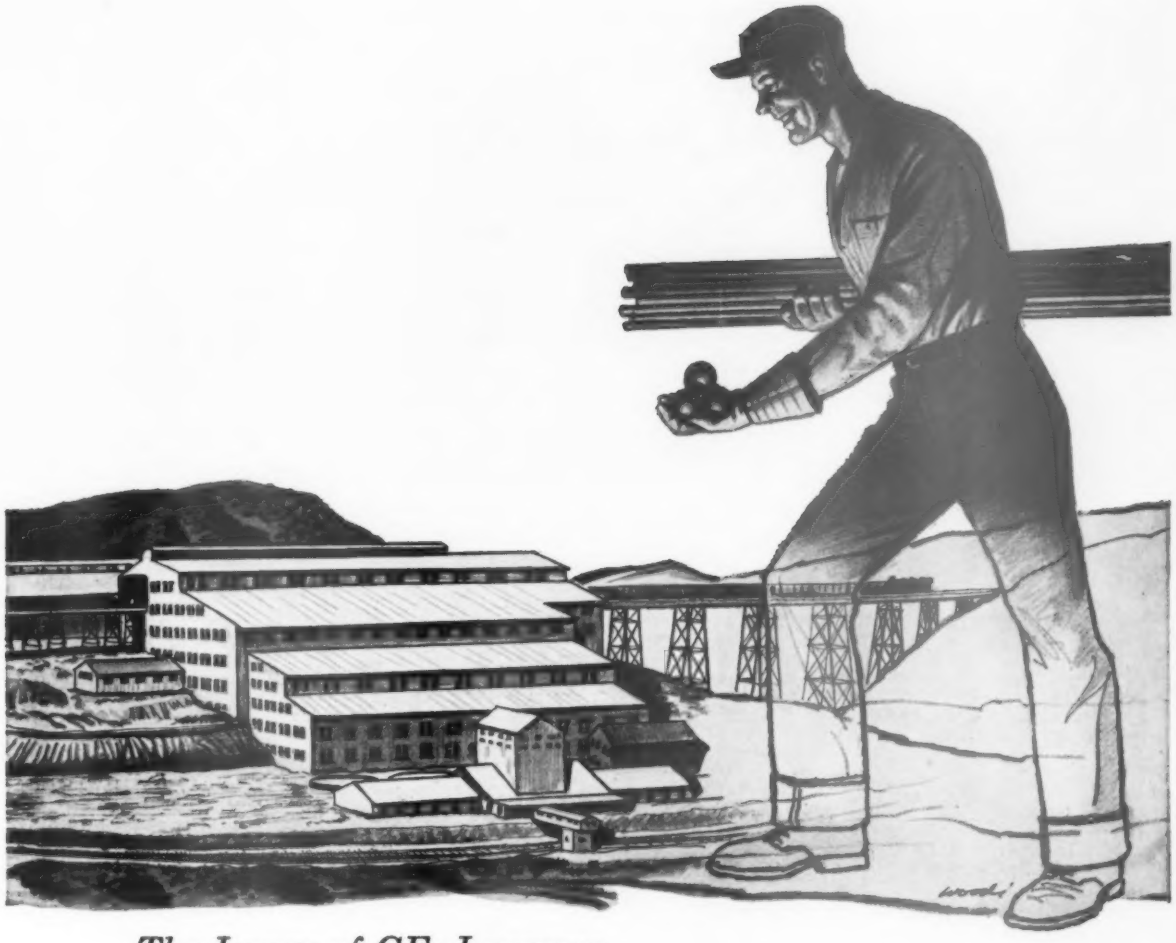
The cement making company is a wholly owned subsidiary of Colonial Sand & Stone Co., Inc., of New York. It is part of this closely-held, family-controlled rock products producer's program to assure a continuous supply of cement to its far-flung operations.

Colonial Sand & Stone is one of the largest integrated rock products producers in the East. It is the largest concrete products producer in metropolitan New York, delivering more than 31,000 cu. yd. a day of ready-mix. Before the new cement plant was built, the company depended on more than 16 suppliers of cement to keep operating at top capacity.



The new plant is in a strategic location to distribute bulk cement widely using Colonial's barge fleet. Kingston is on the Hudson River about 100 mi. north of New York, center of the parent company's well-established marketing system. Albany is about 50 mi. to the north. It is the gateway to the Erie Canal system tapping the markets for cement in central New York. It has been reported that a second kiln will soon be installed to make bulk cement available to outside purchasers.

Case history data are not available. END



The Image of CF&I assures

quality steel Mining Products

This Image—the CF&I giant—stands for hundreds of dependable steel products used by many industries. And the CF&I name is prominent in the mining industry for such top-grade products as grinding balls and grinding rods.

For instance, the special analysis, hot-forged steel used in CF&I Grinding Balls gives uniform wearing qualities... high impact and abrasion resistance... maximum grinding efficiency.

CF&I Grinding Rods are hot-rolled from steel of special analysis, determined through years of experience to provide a hardness for high wear resistance, yet with a toughness to exclude bending or premature breakage. All rods are machine-straightened and their ends cut square so that they will freely rotate in the rod mill for better grinding.

We suggest you contact the nearest CF&I sales representative. He'll be glad to discuss your grinding problems with you, or give you complete information on all CF&I Mining Products.

OTHER CF&I STEEL PRODUCTS FOR THE CEMENT INDUSTRY

CF&I Grader Blades • CF&I Industrial Screens • CF&I Mine Rail and Accessories
CF&I-Wickwire Rope • CF&I Rock Bolts and Realock Metallic Fabric

CF&I STEEL

MINING PRODUCTS
THE COLORADO FUEL AND IRON CORPORATION

In the West: **THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque · Amarillo · Billings · Boise · Butte · Denver · El Paso · Farmington · Ft. Worth · Houston · Kansas City · Lincoln · Los Angeles · Oakland · Oklahoma City · Phoenix · Portland · Pueblo · Salt Lake City · San Francisco · San Leandro · Seattle · Spokane · Wichita

In the East: **WICKWIRE SPENCER STEEL DIVISION**—Atlanta · Boston · Buffalo · Chicago · Detroit · New Orleans · New York · Philadelphia

6625-A

Enter 1055 on Reader Card

Far from "primitive," The Northern Lime Co., Ltd's. new Lime Acres plant in South Africa yields 30,000 tons of quality lime per month

Remote lime plant proves

THE NEW LIME ACRES PLANT of The Northern Lime Co., Ltd., located 100 miles northwest of the Kimberley diamond fields on the Kaap Plateau, produces upwards of 30,000 tons of lime a month. We believe that few plants in the world can exceed this output, nor can many of them produce lime of comparable quality.

We have a deposit of the purest limestone yet found in South Africa. It has nearly 98 percent calcium carbonate, 1½ percent magnesium carbonate and less than ½ of 1 percent silicate. However, a trace of manganese causes the burnt lime to be buff-colored. Table I shows the excellent quality of unslaked lime, while exceptional purity of the hydrated product is shown in Table II.

This newly discovered deposit is in a primary limestone outcrop of marine origin about 35 mi. long and from 1 to 6 mi. wide. The thickness of the limestone is about 200 ft., with a few narrow bands of dolomite and chert included. At the present we are working a 70-ft. face about 2,000 ft. long. The area owned by Northern Lime covers about 17,000 acres—enough highgrade limestone to last the country 400 yr. Only about 25 acres of this has been developed.

The design and layout of our rotary kiln plant at Lime Acres are based largely on American experience and ideas. Because of the many unknowns at the time of planning, the design was made as flexible as possible. This policy has paid handsomely in the few modifications that have been found necessary.

Three 10 x 340-ft. rotary kilns are in operation, with provision for a fourth. Design capacity of each kiln is 330 tpd., but they are now making an average of 420 tpd. The daily record for one kiln is 570 tons. This may be claimed as a world record for a unit of this size, a performance of which we are justifiably proud.

Almost all users have expressed a preference for the rotary kiln lime because of its greater reactivity. Not all the credit for this should be given to the rotaries; perhaps the quality of the raw material is equally important.

In spite of its unusual appearance, the buff-colored lime is finding an ever-expanding market. A half-million tons of lime and an enormous tonnage of limestone annually find their way into a large variety of industries. Uranium takes more than half our output. Next comes gold, closely followed by carbide, steel, sugar, paper, water purification and agriculture. No building lime is produced at the plant.

We are able to keep our finger on the pulse of industry in our country. Problems encountered in the use of lime are brought to us by our customers. Their needs, difficulties and suggestions are re-

*General Manager, Northern Lime Co., Ltd., Johannesburg, South Africa

Belts feeding stockpiles with different sizes of limestone. Raw stone for dispatch to customers is fed from recovery tunnel to railway trucks by inclined belt on left and to kilns by belt which can be seen to the right of smoke stacks

progressive

by R. E. Lowther

ferred to our company chemists who are constantly seeking modifications which would still further improve the product or lower costs.

It is significant that the only increases made in the price of lime during the past 20 years were those passed on from increases in freight and in the delivered price of coal. In spite of the decreasing value of money, no appreciable increase in operating expense has been observed. We feel that this is mainly due to greatly improved operating techniques.

Equipment in the quarry handles about 160,000 tons a month, including overburden. All this material is now handled in trucks—six with 18-ton trailers and two with 22-ton trailers. However, as soon as public utility power is available, we will consider converting the trucks to trolley units. The engines will then be replaced by 110-hp. dc. electric motors and an overhead wire and trolleys installed.

The depth of overburden is usually only 2 or 3 ft., but can be up to 15 ft. in limited areas. Overburden consists of surface limestone, chert pebbles, banded ironstone from the nearby hills and windblown sand from the Kalahari Desert. A number of solution channels and "grikes" are filled with this material, occasionally to a depth of 30 ft. All

Please turn to page 124

Three of these 10-ft. diameter x 345-ft. rotary kilns are in operation at the Lime Acres works. Feed bins with rotary table feeders at far end maintain a constant and regular feed of raw stone

Two of the three 2½-cu. yd. mechanical shovels operating in the Lime Acres quarry

NEW
NEW
NEW

3000-lb. CAPACITY CASE®

does the work of 2 smaller rigs with.....

speeds truck loading

8' dump clearance, with 37" reach, enables you to fill trucks fast. Note how tilt cylinders stay parallel with lift arms . . . no pinching or shearing action to endanger operator.

get a free demonstration . . . see how this NEW 1-cu. yd.

7800 lbs. of breakaway

Enables you to fill bucket quicker for faster load-and-dump cycles.

no bounce, no dip, no sway

Better weight distribution means greater safety, less spill loss.

attachments add versatility

You can add pallet fork, block fork, and all-weather cab.

W-5 TERRALOAD'R

..25% less investment!

only $5975

complete with 1-cu. yd. bucket, F.O.B. factory, plus freight and taxes. Price subject to change without notice.

Here, at last, is a *full cubic yard*, 1½-ton capacity, unit loader that will move as much material under normal conditions as *two* smaller wheel rigs. What's more, you *save up to $1500* in investment cost because major components — including engine and transmission — are engineered and built by *J. I. Case*, instead of being puchased from *"outside"* sources.

more good news!

With the Case-powered W-5 you get just the *right* combination of engine power and machine weight to insure maximum output, with *minimum fuel consumption*. Torque-converter drive doubles push-pull power instantly, automatically — *without clutching, shifting or stalling*. Forward-reverse power-shift, coupled with front-wheel drive and rear-wheel power-steer, provide exceptional maneuverability and ease of handling.

6 equipment options ... more coming!

The W-5 is available now with interchangeable 1-cu. yd. or 1½-cu. yd. (light material) bucket, pallet fork, block fork, rotary broom, and optional all-weather cab. Other add-on attachments coming soon. So don't delay. Mail handy coupon today for full details and a free W-5 demonstration on your job.

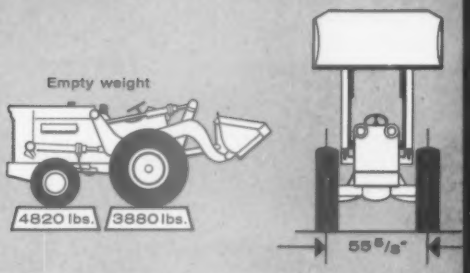
CASE®

J. I. CASE CO., RACINE, WIS.

World-wide sales and service

73% MORE CROWDING POWER gets heaped loads faster

You've never seen anything to match the fast, smooth crowding action of the Case W-5. *Parallel-circuit* control-valve applies full power from 30 gpm pump to *both* lift and bucket-tilt cylinders at the *same time*. In addition, tilt cylinders use *full* piston area on breakout stroke, to produce a total breakaway force of 7800 lbs. — *73% more than any competitive machine* in the W-5 price range.



Better machine balance helps you carry more, spill less

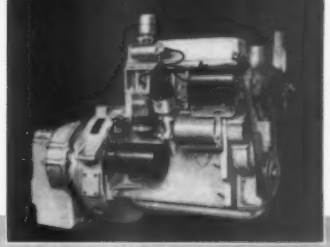
Exclusive Case design puts *24.2% more* empty machine weight on rear wheels, so you can carry heaped payloads faster, more safely, without tipping forward, or spilling load. Extra-wide wheel-tread, plus low center of gravity, gives unequalled lateral stability for dumping into high trucks, without "reeling" or side-sway.

MAIL THIS COUPON TODAY for full details!

TERRALOAD'R can cut your costs

works inside or outside plant

Short 10'4" turn radius makes maneuvering easy in tight spots.



correct power-weight ratio

164-cu. in. Case engine provides dependable power, low fuel cost.

J. I. CASE CO., Dept. E1479, RACINE, WIS.

☐ Send full information on the W-5 Terraload'r.

ALSO SEND LITERATURE ON:

☐ Larger 4-wheel-drive Terraload'r ☐ Crawler Fork Lift
☐ M-420 Wheel Fork Lift ☐ Crawler-mounted Loaders
☐ Power-Tilting Bulldozers ☐ Power-Angling Dozers

Name ..... Title .....

Company .....

Address .....

City ..... Zone .... State .....

C-TL-303

Ship hoists convey finished product from kilns to six silos, each with a capacity of 500 tons

Northern Lime *continued from page 121*

this material is cleared and hauled away well in advance of the face to reduce contamination of the quarried stone.

A pneumatic drill puts down a 6-in.-diam. hole at the rate of 15 to 20 ft. an hour. A system of mass-blasting brings down 40,000 to 50,000 tons of stone at each blast, and the fragmented stone is loaded out with three 2½-cu.-yd., 3,000-v. electric shovels.

The primary crusher is a 42-in. gyratory with a capacity of about 600 tph. of minus 5-in. product. In the screening plant, the minus ⅜-in. stone is immediately removed and sent to the waste dump. At some future date it may be recovered and used for cement rock or agricultural stone. The 5 x ⅜ in. passes over slow-moving sorting belts from which all doubtful material is removed by hand. The good material then enters a comprehensive system of screening and grading with secondary crushing, if necessary, before it reaches one of the six stockpiles.

Two of these stockpiles are of the 5 x 3-in. and 3 x 2¼-in. stone, both sold as raw limestone. Two piles of 2¼ x 1½-in. limestone are burnt to meet customer's specific requirements, while the 1½ x ⅞-in. and ⅞ x ⅜-in. sizes constitute the bulk of the kiln-feed material. Due to the accurate gradings required, the screening plant is very extensive and incorporates two triple-deck and three double-deck vibrating screens. More than 8,200 ft. of conveyor belt is used in the plant.

The brittle stone at Lime Acres yields between 2 and 5 percent unusable fines during screening of the crushed stone. To assure a uniform burn, these fines are removed from kiln feed materials with a fixed grizzly in the chutes feeding the kilns.

A recovery tunnel under the stockpiles is equipped with two belt conveyors. These can remove stone to supply the kilns at one end of the tunnel or can carry it to the railway weighbridge at the other end at the rate of 400 tph.

One of the first major improvements which proved to be necessary early in the operation of the new plant was in the sizing of the kiln feed. Originally, the design called for 2½ x 1½-in. and 1½ x ½-in. stone, with material from the rotary table feeder dropping directly into the kiln. Now three sizes of limestone are burnt, and the removal of the fines in the chute ahead of the kiln greatly improves the grade.

Another improvement was the abandonment of the original dust collecting system in the secondary air stream. Without this elaborate equipment, fuel economy and the uniformity of the product have been greatly improved. Great emphasis is placed on close control of kiln rotation speed, temperatures and volume-pressure relationships. The operators are assisted in maintaining kiln efficiency by a panel of modern indicating, recording and controlling instruments.

Ash ring formation in the kilns was somewhat troublesome in the early stages, but this problem has been virtually solved and few shutdowns are

TABLE I—Quality of Unslaked Lime

Constituent	Range	Percent
SiO_2 & Insolubles	2.27	.62
R_2O_3	1.87	1.75
Total CaO	93.73	95.62
MgO	1.48	1.40
Ignition Loss	.60	.54
Carbon (free)	.02	.02
Available CaO	91.56	94.08

TABLE II—Purity of Hydrated Product

	Percent
Available CaO	71.12
Residue on 100 mesh screen	Nil
Residue of 200 mesh screen	2
Rejects, less than	½ of 1

now made on this account. Runs of over 90 days have been recorded.

The kilns are fired with pulverized duff coal prepared in bowl mills at the rate of about 6 tph. The ground coal at 95 percent minus 200 mesh is fired into the kiln by a stream of hot air extracted from the kiln hood. Secondary air is taken from the lime cooler.

The brittle nature of the limestone results in considerable reduction in sizes during burning. A test on the 2½ x 1½-in. kiln-feed material showed that about 70 percent of the quicklime produced from it was minus 1 in. However, the proportion of this product that could be called "fines" is so small that all run-of-kiln lime is sold without further screening.

Hot lime from each kiln drops into a 4½ x 70-ft. vibrating air-quench cooler. A lime bin collects the cooled product and feeds it to an automatic skip hoist to be elevated to the lime storage silos. These are mild steel bins, two for each kiln, with a total capacity of about 3,000 tons of quicklime. All six silos are served by a common collecting belt conveyor which can load rail cars on the weighbridge at a rate of about 360 tph.

Although the plant is on a main railway line, the volume of traffic is so heavy that we have two steam locomotives to marshall cars on three miles of railway siding. Full of lime, these cars are taken to all parts of the Union by the South African Railways.

THE NORTHERN LIME COMPANY, LIMITED

SEVENTH FLOOR,
LEWIS & MARKS BUILDING,
65 PRESIDENT STREET,
JOHANNESBURG

17th March, 1959

The Editor
ROCK PRODUCTS
Chicago, U.S.A.

Dear Sir:

We regret that it has been necessary to criticise adversely an article in Rock Products. Mr. Asbe's investigation of the lime industry in South Africa must have been hasty indeed, as he omitted the three largest plants in the country from his itinerary. His comments in the September, 1958, issue have been read with concern and amazement by those of us who know the lime industry and who pride ourselves on the quality of our product.

On the other hand, we welcome what appears to be a favorable opportunity of presenting an objective article on our operations. This story of The Northern Lime Company, Ltd. will certainly give a more accurate picture of the lime industry in South Africa. We hope that it will be of general interest to your readers, particularly to those who so kindly discussed our problems with us at the National Lime Association meeting in Birmingham, Ala., in October, 1953.

Yours faithfully,

R. E. LOWTHER
General Manager

Electric power is now generated on the property by steam turbines, but public utility power will soon be available. Three coal-fired chain grate boilers supply steam to a 3,000-kw. and a 1,500-kw. 500-v. turbo alternator.

Water is a problem in this area, where rainfall averages about 10 in. annually. The nearest river is the Vaal, over 50 miles away as the crow flies, and at a much lower altitude. The condensers and the community must depend upon deep wells for water, but this is adequate for normal needs. As expected, the water is slightly alkaline, but the carbonate hardness is readily softened by the lime-soda process.

The Lime Acres plant is in a remote region, 400 mi. from the headquarters in Johannesburg. The head office is in daily radio communication with the plant, and about every two weeks a plane flies in staff and visitors.

It is our policy to recruit labor in the local area of our plants. We have 70 white employes who fulfill administrative, supervisory and more skilled operating functions. These include a large technical staff whose function is the maintenance of the plant. All are housed free with their families in a company-owned village on the property. These people are important, due to the remote situation of the plant, and they operate a well-equipped mechanical and electrical workshop.

There are 350 African employes engaged as vehicle drivers, semi-skilled operators and general laborers. These, some with families, are accommodated in free dormitory huts, and they are fed at no cost to them from an all-electric kitchen staffed by skilled African cooks. Free hospital facilities are provided for all African employes.

Granted, our African labor is poorly paid by American standards, but it must be borne in mind that the African Negro is still primitive in his outlook and so inefficient from an industrial point of view that he is probably the most expensive employe in the world. He has none of that ambition which afflicts the so-called civilized races. After working with us for a contract period of six months, he will return to his kraal for a holiday. This will last as long as the money he has earned, usually a year to 18 months. **END**

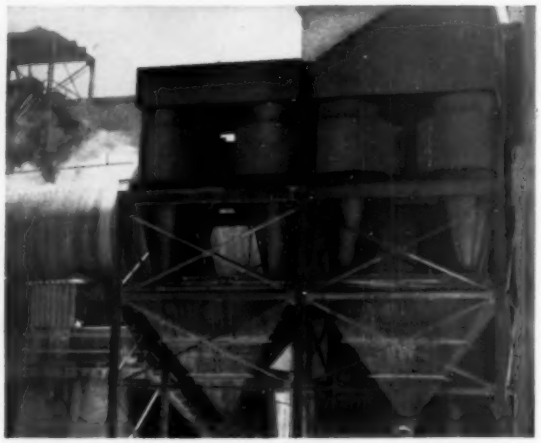
MAJOR EQUIPMENT AT THE LIME ACRES PLANT OF NORTHERN LIME CO. LTD.

Drill, 6-in. "down-the-hole"	Ingersoll-Rand
Shovels (3), 2½ cu. yd. electric	Marion Power Shovel Co.
Trucks (8), Diesel	International Harvester Co.
Trailers (6), 18-ton	Easton Car & Construction Co.
Trailers (2), 22-ton	Easton Car & Construction Co.
Crusher, 42-in. gyratory	Allis-Chalmers Mfg. Co.
Kilns (3), 10 x 340-ft. design	Allis-Chalmers Mfg. Co.
Coolers (3), 4½ x 70-ft. design	Allis-Chalmers Mfg. Co.
Kilns and coolers manufactured in S.A.	Vanderbyl Engineering Corp., Ltd.

PRECIPITATORS

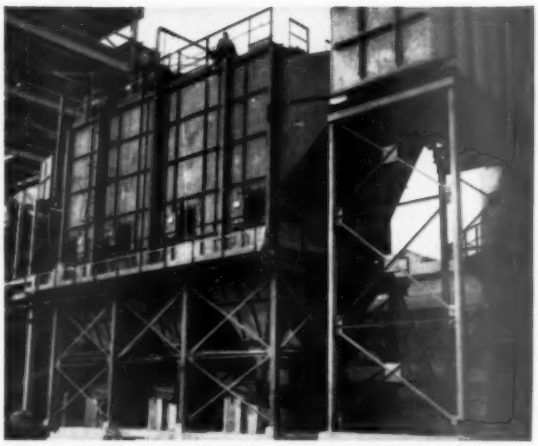
CYCLONE COLLECTORS

Where extra efficiency counts... Industry specifies BUELL



Buell Cyclone Collectors have the exclusive "Shave-off" design which utilizes double-eddy currents within the cyclones to trap an extra percentage of dust and minimize re-entrainment. Large-diameter design prevents bridging, clogging, or plugging. Extra heavy plate construction contributes to long life. Buell-designed manifolding adds to efficiency of operation. Thoroughly described and illustrated in a booklet, "The Exclusive Buell Cyclone."

Buell "SF" Electric Precipitators provide extra efficient recovery of dusts and lower maintenance costs year after year. The exclusive *Spiralectrodes* deliver 50 to 100% more electron emission than other types of emitting electrodes. Their self-tensioning characteristic minimizes electrode breakage. Buell Continuous Cycle Rapping practically eliminates "puffing". Positive Gas Flow Control through adjustable baffles assures maximum efficiency. Write for a copy of the extensively-illustrated booklet, "Buell 'SF' Electric Precipitators."

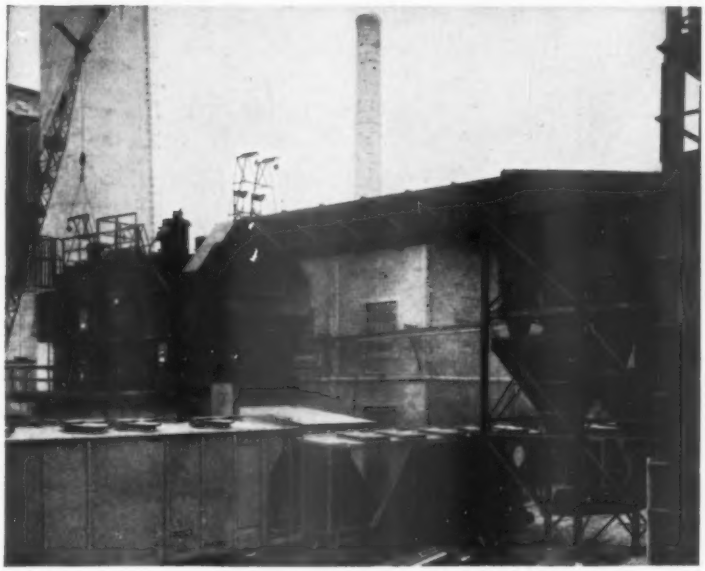


Nine of the 11 electric precipitators purchased by the American cement industry in 1958 were sold by Buell.

Experts at delivering Extra

COMBINATION SYSTEMS

CLASSIFYING SYSTEMS



Buell Combination Precipitator/ Cyclone Systems provide the ultimate in dust collection efficiency *under all conditions.* The operating principles of cyclones and precipitators complement each other, assuring maximum efficiency and stability. This advantage often makes the difference between highly profitable dust recovery and a break-even operation. Buell Combination Systems, as well as Cyclones and "SF" Precipitators, are described and illustrated in detail in a booklet, "The Collection and Recovery of Industrial Dusts."

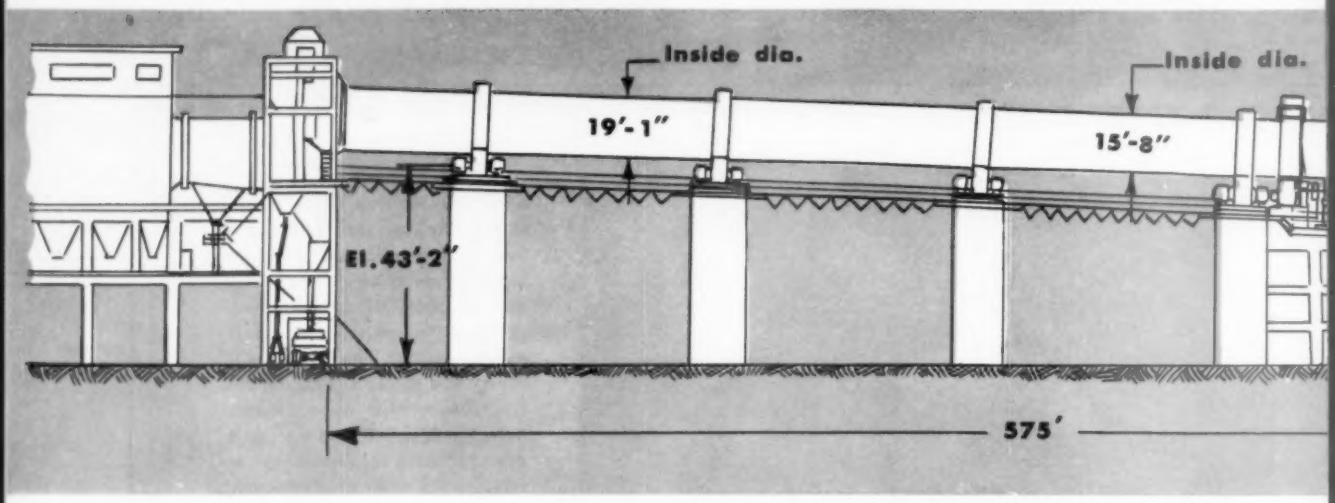
Buell Classifying Systems are unique in operation, combining high efficiency with low power consumption and moderate capital investment. Patented features permit the separation of dry fine powdered or fibrous material from coarse material within a usual fine product range from 10 to 400 mesh. Systems are built in many sizes to handle from 100 pounds to 100 tons of feed product per hour without restriction on particle size or temperature. There are no moving parts. Power requirements vary from 0.04 to 0.5 fan hp per ton of feed per hour. A complete technical discussion is in a folder, "New Buell High Efficiency Classifying Systems.'

For full information on the application of Buell equipment to your plant's dust problems, write Dept. 17-E, Buell Engineering Company, Inc., 123 William St., N. Y. 38, N. Y.

buell®

Efficiency in **DUST COLLECTION SYSTEMS**

Enter 1058 on Reader Card



These 19 x 575-ft. kilns, the world's largest,

Russia gets world's largest

THE TWO 19 x 575-FT. KILNS of one of the largest cement plants in the world, now under construction at Acympt, Siberia, USSR, will be fed with an unusual mixture of limestone and nepheline residues. The characteristics of this raw feed are said to increase kiln production by as much as 25 percent over standard limestone and clay mixes.

The contract for the wet-process plant, scheduled for completion in 1960, was awarded last summer by the official state organization, Technopromimport, to a French firm, Societe Fives-Lille-Cail, Paris. This company is furnishing the complete cement installation. The plant is being built by the Russians under the supervision of French engineers; start-up and performance tests will be conducted by the Fives-Lille-Cail Company.

Production capacity of the plant is to be 33,000 bbl. of Type I portland cement clinker per day, or 34,000 bbl. of Type I portland cement including dry nepheline residue. The kilns will be fired with a solid fuel consisting of a Siberian lignite.

The cement plant is part of an extensive industrial combine in this area. Cement will be a by-product industry, with the nepheline clay base pumped from nearby alumina processors.

The nepheline residue is a compound of 80 percent dicalcium silicate (C_2S or Belite) and 20 percent alumina, iron and silica. It looks like a mineral mud, coming from the treatment of aluminum ore with lime: (Na-K) O (Al_2O_3) SiO_2 + CaO.

The nepheline analysis is about:

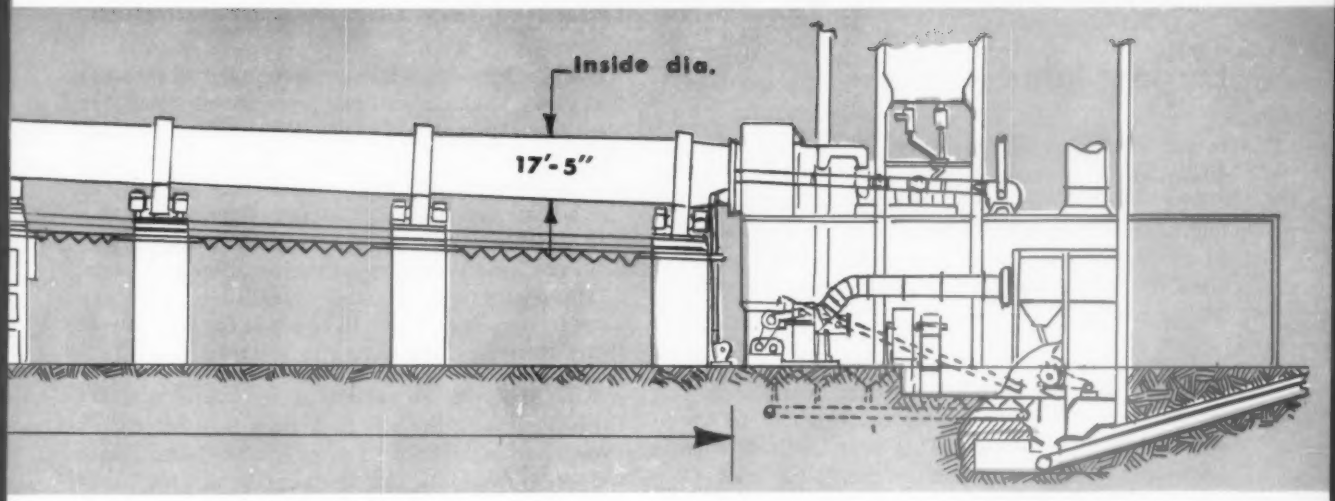
Al_2O_3	2.5 to 3 percent
Fe_2O_3	2.5 to 3 percent
SiO_2	30 to 31 percent
CaO	56 to 57 percent
R_2O_3	2 to 2.3 percent
P_2O_5	0.2 percent
SO_3	0.3 percent
Misc.	3 to 4 percent

The analysis of the raw material slurry fed to the kiln is as follows:

SiO_2	15.69 percent
Al_2O_3	3.86 percent
Fe_2O_3	3.22 percent
CaO	51.01 percent
MgO	1.21 percent
SO_3	0.42 percent
K_2O	0.32 percent
Na_2O	0.62 percent
Ignition loss	23.55 percent
Residue on 4,900-mesh	6.00 percent

In actual operation, this nepheline slurry will be moved by 225-cu. yd.-capacity rotary pumps directly to the tube mills that are to be used for

*Manager of the Cement Equipment Manufacturing Dept., Societe Fives-Lille-Cail, Paris, France. Mr. Comte was formerly with Kennedy-Van Saun Mfg. & Engr. Corp.



are now being installed in central Siberia

cement kilns

Siberian plant to burn unique nepheline mix; makes 12½ million bbl. a year

*by Jean M. A. Comte**

raw-feed grinding. Limestone, delivered crushed with four to six percent moisture, will be hauled by dump trucks to a central storage hall in which three overhead traveling cranes operate. Eventually some additive materials will be handled the same way as the limestone.

The cranes, equipped with 9-cu. yd. buckets, have a span of 103 ft. and a capacity of 25,000 kg. per unit. Each is driven by one 100-hp., one 40-hp. and two 150-hp. motors. Limestone will be discharged into five bins feeding the five raw grinding mills.

The 8-ft.-8-in. x 46-ft. three-compartment tube mills that will be installed are lined with manganese steel plates and loaded with 110 tons of grinding media and cylpebs. One mill alone weighs 260 tons. The mills are driven laterally by 2,500-hp. 5,000-v. synchronous induction motors. Planned production is 75 tph. (dry material).

A feature of these tube mills is that all reducers and guards are fitted with copper piping to provide hot water or steam circulation during cold weather and cold water circulation during the summer.

The nepheline mud will be delivered to the mill feed-end as a mixing water. Due to the low plasticity of this product, 32 percent moisture slurries are expected to be used. Laboratory tests have been carried out with 28 percent moisture slurries and, as a result, some precautions will be taken to avoid nepheline decantation.

Nepheline slurry will be supplied and proportioned through automatic weight proportioners. Variations in proportioning can be controlled and instantaneously recorded in a central control room and corrected from it.

From the mills, the slurry is to be sent by rotary pumps to a set of armored concrete silos vented by compressed air blowing from the bottom and sides. The slurry pumps have a 400-cu. yd. per hour capacity.

They are designed for 27-percent moisture slurries weighing from 1.7 to 2.07 kg. per cu. m. Like the nepheline pumps, they are driven directly through a coupling sleeve and are equipped with rubber impellers.

Eight 10-ft.-diam. x 40-ft.-high mixing tanks will have a combined capacity of 24,000 tons of slurry mix. Seven pumps will discharge slurry from one pond to another, guaranteeing a perfect blend. These pumps (400 cu. yd. capacity) also will send the slurry to two 82-ft.-diam. planetary ponds having a capacity of 5,000 tons each which will slowly temper the raw feed before delivering it

Largest kilns *continued . . .*

to the kilns through 6 rotary stirrers driven by 40-hp. variable speed motors.

The resulting slurry will have a composition identical to that of a normal slurry, constituted of 51.87 percent raw stone and 48.13 percent nepheline. It will be sent to the kilns through a volumetric feeder.

Two identical 575-ft.-long kilns are to be installed. Inside diameters are 19 ft., 16 ft. and 17 ft. 5 in. The 19-ft. diameter corresponds to the 200-ft.-long drying zone. This zone is lined with heavy-duty extra-siliceous bricks. Networks of hanging-type evaporating chains—250 tons per kiln—will be used as heat exchangers. The 16-ft.-diam. decarbonation zone is lined with insulating brick. The 17-ft.-5-in.-diam. x 82-ft.-long burning zone is lined with magnesia brick.

Each kiln weighs 2,100 tons and is supported by 7 tires of various widths. Weight of the largest tire is 60 tons.

For the longitudinal support of each kiln, special hydraulic tire-adjustment guide-rollers will be installed. This system is designed to prevent longitudinal thrust of the kiln, normally found in the usual slanting roller arrangement.

Outstanding feature of the new arrangement is that it stops, by means of swiveling rollers mounted on roller bearings, not only one but as many as six tires. The purpose of the system is to keep the tires smoothly in their original locations at every moment.

Each kiln will be driven at a speed of .6 to 1.2 rpm. by two 400-hp. motor-reducer sets.

The drives specified by the Russian users are induction motors with sliding rheostats.

The kilns will be fired with a solid fuel, a North Siberian, very hard lignite. Fuel consumption is assumed to be 25 tph. with the proposed 23,340-Btu. thermal power. Fuel is to be stored inside the central hall by the three overhead traveling cranes. Lignites will be dried in a 12-ft.-diam. x 82-ft.-long rotary dryer driven by a 75-hp. motor and fired by means of a pulverized coal burner designed to use the kiln fuel discharging from a 5-in. pump. The ashes are unloaded directly into the storage hall.

Dried lignite—containing less than ½ of 1 percent moisture—will be taken to the mixing bins by a set of conveyors installed in the coal shop. The lean coal will be conveyed to the same bins without prior drying.

Fuel proportioning is to be accomplished through the same kind of weight-proportioners used for weighing the raw materials. Grinding and further drying will be performed in a 10-ft. 5-in.-diam. x 21-ft. 4-in.-long air-swept mill heated by part of the hot air from the kiln cooler. Capacity of this mill is rated at 32 tph. Electrostatic precipitators are to be installed at the pulverizer discharge ends.

The coal supply will be controlled by a rotary vane feeder. Provision will be made for semi-direct firing through a bin acting as a buffer.

Kiln dust will be reclaimed from precipitators for mixing with the kiln fuel. Dust is to be proportioned and supplied by a rotary vane feeder under a dust storage bin. For the time being, the exact dust recovery cannot be rated; it will depend upon the alkali content of the kiln dust. In any event, part of the dust will be re-utilized with the fuel.

The kiln nozzle moves in every direction, with all movements controlled by servomotor. Moreover, and this is a novelty, the nozzle continuously rotates on itself to avoid premature local wear and bending which is dangerous to the lining.

Reciprocating grate coolers have been selected for this installation. The users have shown their preference to the inclined type over the new horizontal one.

Two coolers will be installed, one for each kiln. Cooler size is 14 x 75 ft., and weight per unit is 290 tons. The guaranteed performance is to be 2,500 tons per day of clinker cooled from 2,500 deg. F. to 150 deg. F. These coolers are especially designed for hot-air recirculation. The width of the cooler permits the use of two 20-in.-wide discharging chains and two clinker crushers per unit.

Driving motors provided for the coolers and corresponding fans are as follows: 140-hp. motors for the recirculation fans; 120-hp. motors for the primary fans; 20-hp. variable-speed motors for the grate drive, and 20-hp. motors for the clinker crushers.

Clinker is discharged by two 20-in.-wide drag chains per kiln. Capacity per chain is rated at 104 tph., which is equal to total kiln production. A clinker integrator scale is installed at the end of each chain.

From the chains, the cooled clinker falls into the storage hall where it is recovered by one of the three 9-cu. yd. overhead traveling cranes used for carrying coal, clinker and additive materials to the various mill bins and other units.

The grinding department, said to be the largest in the world, is very unusual. Two grades of cement will be produced: a Type I portland cement

increase kiln production by as much as 25 percent

and a finer one with a higher-grade CaO content. The normal Type I portland cement will be prepared in four three-compartment compound grinding mills operating in open circuit, and the finer grade of cement in only one grinding mill. This one will be similar to the others, but will operate in closed circuit.

The mills are 10 ft. 5 in. diam. x 46 ft. long, and each unit weighs 260 tons. To start with, they will be loaded with 170 tons of grinding media.

Capacity of each mill is rated at about 55 to 60 tph. of 2,800-Blaine ground product. The fifth mill is of the same size as the other four, but will produce 45 tph. of extra-fine 4,000-Blaine cement.

These grinding mills are driven by 2,500-hp., 5,000-v. synchronous induction motors. The mills are fed through three weighing feeders with an output of 60, 10 and 3 tons, respectively. Each mill is equipped with an electrostatic precipitator identical to the kiln precipitators, but smaller in size. These precipitators are also provided for scrubbing the air of the grinding department.

The mills are designed to run at 19 rpm. through 2,500-hp. helical reducers. In order to insure the greatest possible evenness in production, complete reducers and 2,500-hp. motors will be supplied as spares for immediate replacement in case of failure.

The question of worn media classification has been solved by the use of a perforated toboggan. The media are handled by a lift-loader discharging onto the toboggan or into the grinding mills.

Finished cement product will be conveyed by means of airslides to a large pit equipped with six 10-in. pumps (5 in operation, 1 as a standby) having a capacity of 100 tons per unit. This smart arrangement clears the grinding room and facilitates grinding media loading and repairs.

Storage and bagging facilities, because of the plant's enormous size, are being planned very carefully. Twenty silos, with a total storage capacity of 80,000 tons, will be provided. This is enough for 16 days' kiln production. The concrete silos are 40 ft. diam. and 53 ft. high.

Cement is to be pumped from the mill directly to the tops of the silos. One hundred servomotor-driven gates allow for all possible loading combinations. All bends in the cement piping will be lined with porcelain. Two sleeve-type dust collecting batteries are to be provided at the tops of the silos.

Silo discharge will be through open-type airslides, arranged in a staggered manner, unloading into two main airslides (total length: 100 meters) connected with the main duct leading to the bagging machines. The two silo lines unload into two 8-in. pumps located in a pit and connected directly with the bagging-machine bins.

The bagging machines specified must be of the rotary type and have a capacity per unit of 100 tons.

A whole network of conveyors has been provided for to allow loading of several trucks at a time. Due to local conditions, only one line is reserved for truck loading.

Bulk loading will be largely used, especially in rail cars. Eight motor-driven airslide unloaders will be installed to allow loading on two different railroad tracks. **END**

Here's an 85-ton segment of the giant kiln starting its long trip to central Siberia

DRILL BLAST HOLES

* 2 TO 5 TIMES FASTER
* ONE OPERATOR
* ONE MACHINE

BLASTHOLER drilling 25′ blast holes 3″ in diameter in limestone quarry. Production averages 1200′ per day.

BLASTHOLER

A self-propelled rotary drill, the BLASTHOLER is mounted on tracks or dual pneumatic tires — covers terrain like a bulldozer. The BLASTHOLER requires only one operator — carries its own air for cleaning blast hole. In limestone quarries meeting highway specifications, the average time for 20′ holes is 3 to 4 minutes. Many BLASTHOLERS have drilled more than a million feet within a 2-year period. Chances are the BLASTHOLER can improve your production record and save you money, too! *Contact your nearest dealer for a cost-cutting demonstration today!*

BLASTHOLER DEALERS IN THE MIDWEST

The W. W. Williams Co.
Columbus, Ohio

Reid-Holcomb Co., Inc.
Indianapolis, Ind.

Watson Equipment, Inc.
Pittsburgh, Pa.

Ray C. Call, Inc.
South Charleston, W. Va.

Illinois Road Equipment Co.
Springfield, Ill.

Williams Tractor Co.
Louisville, Ky.

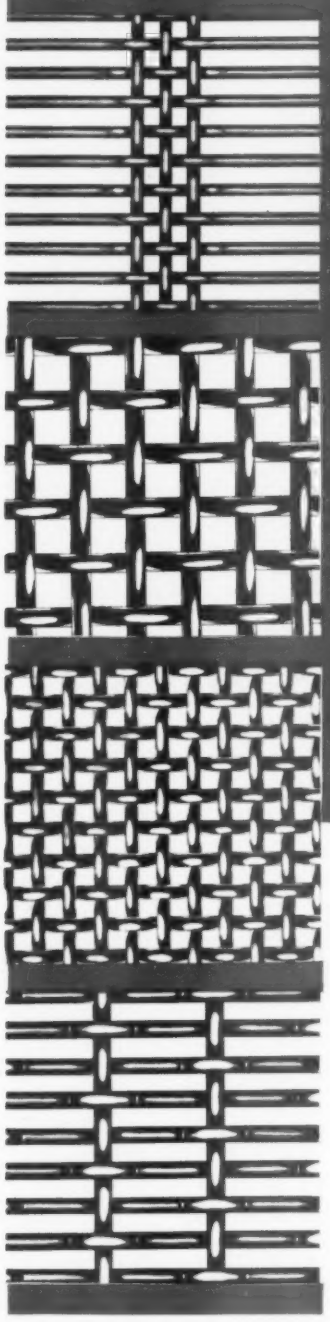
Bulitz Machinery Co.
North Kansas City, Mo.

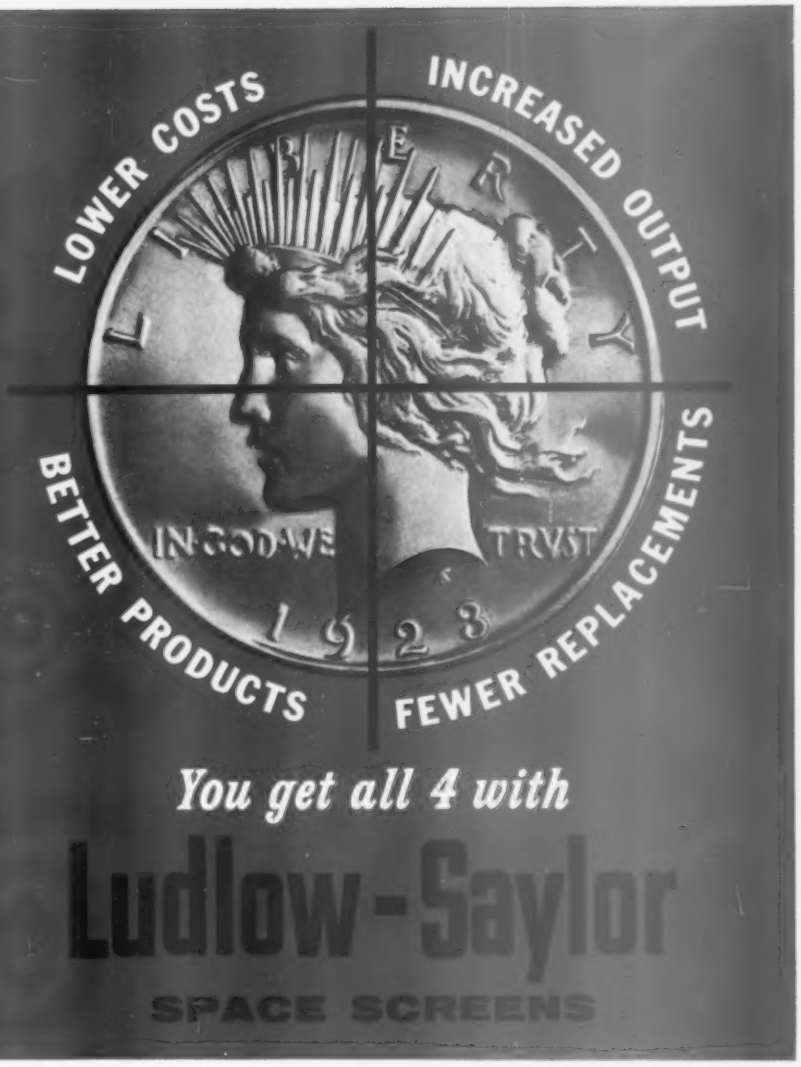
Jas. W. Bell Co., Inc.
Cedar Rapids, Iowa

DRILLING ACCESSORY AND MANUFACTURING COMPANY, INC

2006 South Industrial Boulevard
Dallas, Texa

Enter 1054 on Reader Card





You get all 4 with

Ludlow-Saylor

SPACE SCREENS

SAVE UP TO HALF ON SCREENS! In addition to top re-resistance to wear, fatigue and distortion, Ludlow-Saylor Screens are engineered and precision made to give you these vital assists to higher profits:

- $ Critical product specifications are easier met with consistent uniformity
- $ Plant-clogging re-circulating loads are cut to a minimum
- $ Production is raised with faster feeds
- $ Variable crushing characteristics of raw materials are automatically corrected
- $ Replacement screen costs, downtime and maintenance are drastically reduced.

ORDER L-S SCREENS BY NAME. They cost no more but last up to twice as long.

Immediate Shipment Of Most Weaves & Sizes
Write for catalog

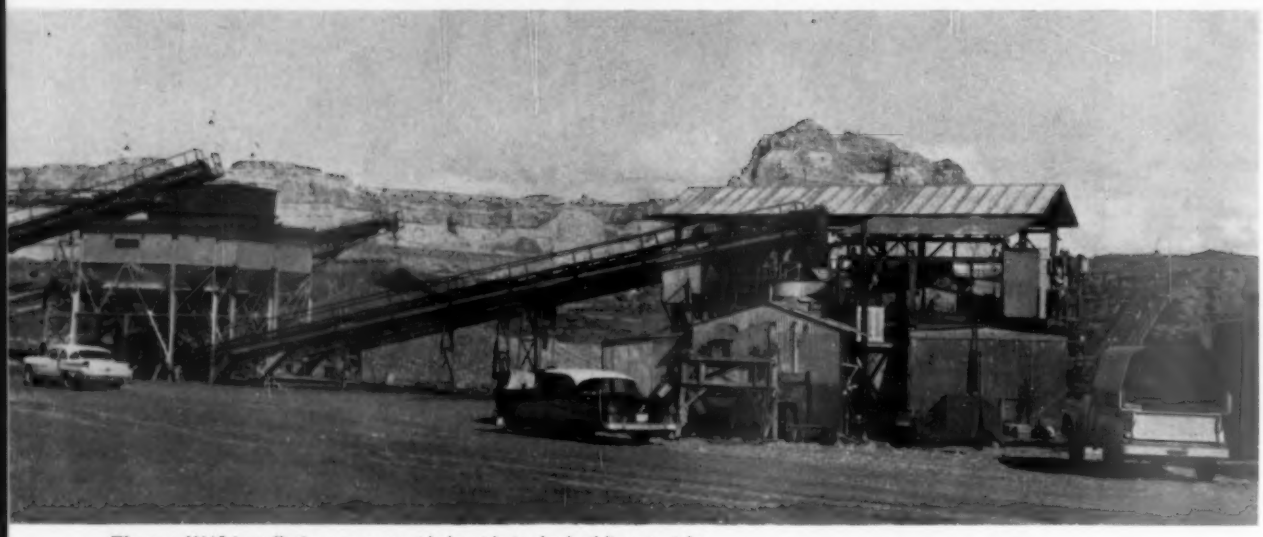
SINCE 1856

Ludlow-Saylor Screens and Wire Cloth can be supplied in any steel including SUPERLOY high carbon. LUDLOY oil-tempered, stainless and other alloys; Monel, bronze, copper, brass or any metal that can be woven into wire.

LUDLOW-SAYLOR WIRE CLOTH CO. 602 S. NEWSTEAD AVE. ST. LOUIS 10, MO.

SALES OFFICES: BIRMINGHAM, 1727—6th Ave. N. • CHICAGO, 6261 W. Grand Ave. • PITTSBURGH, Union Trust Bldg. • HOUSTON, 5638 Harvey Wilson Drive • DENVER, 1530 Carr St. • LOS ANGELES, Star Wire Screen & Iron Works, Inc. (Ludlow-Saylor Subsidiary), 2515 San Fernando Road.

Enter 1106 on Reader Card



The two HMS installations operate side by side in the building at right

HMS for sand pioneered at Glen Canyon

by Walter B. Lenhart

HUGE CONSTRUCTION PROJECTS are often the proving ground for important innovations in aggregate processing, and the Colorado River's new Glen Canyon dam is no exception. Here, heavy media separation is being used for the first time to process a sand fraction.

The dam, scheduled for 1964 completion, is being built by Merritt-Chapman & Scott Corp. for the U. S. Bureau of Reclamation as the key structure of the $990-million Upper Colorado River Development program. The dam and powerhouse will contain 5½-million cu. yd. of concrete, which naturally calls for a whopping big order of aggregate —10 million tons.

Actual pouring of concrete in the mass of the dam itself is scheduled for the fall of 1959. Aggregates for this job will be supplied by a sand and gravel plant with an input of 1,400 tph., and work on this plant started in February, 1959. In the meantime, a smaller plant with a 200-tph. capacity is supplying aggregates for tunnel lining, roads, buildings, bridges, etc.—and helping Merritt-Chapman & Scott to solve aggregate production problems that will be faced in the bigger job ahead. (See ROCK PRODUCTS, July, 1958, page 86, for story of how aggregate deposits were located by bucket-drill sampling program.)

The pit-run at the aggregate plant—located on Wahweap Creek about five miles from the dam site—contains soft stone, shales, sandstones and some clay. Specifications call for a cut at 2.5 sg., and no more than 2 percent of the final product may be material less than this specific gravity. Since the specific gravity of the usable gravel and sand averages around 2.55, this is obviously a tough "spec" to meet. But despite the slight difference between the specific gravities of acceptable and nonacceptable product, HMS is doing the job.

Besides the types of rock that are said to be deleterious, the HMS plants remove calcareous siltstone and some sandstones. The aggregate also

contains some heavy ferruginous rocks that very possibly are not removed.

In the pit, a 6½-cu. yd. dragline bails directly to a reciprocating plate feeder under the hopper serving the plant. All intraplant transportation is by belt conveyor.

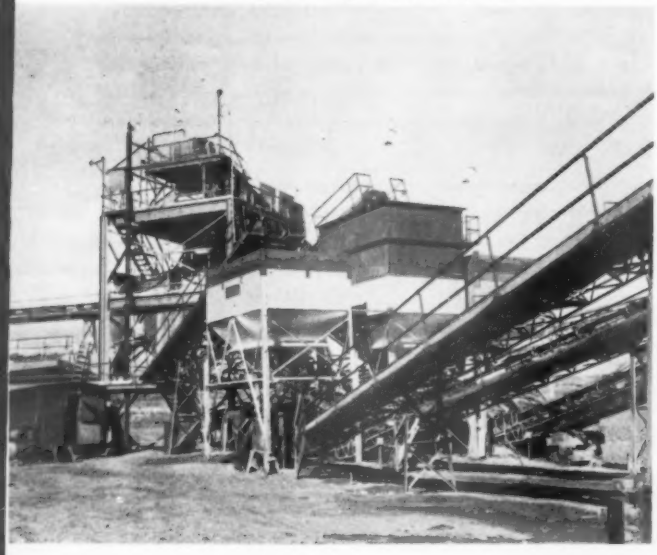
Water supply for the main washing plant will come in part from the nearby creek, with which is blended sufficient water from four deep wells that have a total capacity of 5,200 gpm. Blending water from the two sources makes the soluble salt problem practically nonexistent. No water is taken from the Colorado River itself.

The present washing plant is quite conventional. A main tower holds three wet vibrating screens. At the top is a 3-deck, 5 x 10-ft. unit, and below it are two 5 x 10-ft. double-deckers that receive a split feed. No crushing is permitted. The final products are a 2½-in. gravel, 1½-in. gravel, a ¾-in. gravel and the sand. All plus 2½-in. rock is now temporarily wasted but may be reclaimed later when the larger plant is in operation.

A natural sand is recovered from a 7-spigot water scalper and dewatered at a rate of about 20 tph. in a 30-in. screw. Valves on the sand scalper are air-operated. The natural sand is later blended with the ¼ x ⅛-in. sand processed in the HMS section.

The original HMS section consisted of a 54-in.

Sand and gravel processed in the washing plant are stored in these bins. Vibrating feeders under the bins transfer the material to belt conveyors leading to the HMS plants



This view of the Colorado River looking upstream shows the construction area at Glen Canyon dam. The steel arch bridge under construction here now supports the crossing of alternate U.S. Highway 89

spiral-type separator with its related equipment—a 5 x 16-ft. single-deck washing and draining screen, two pumps, a 30 x 36-in. drum-type magnetic separator, a 30-in. densifier, a 6-in. demagnetizing coil and a control center.

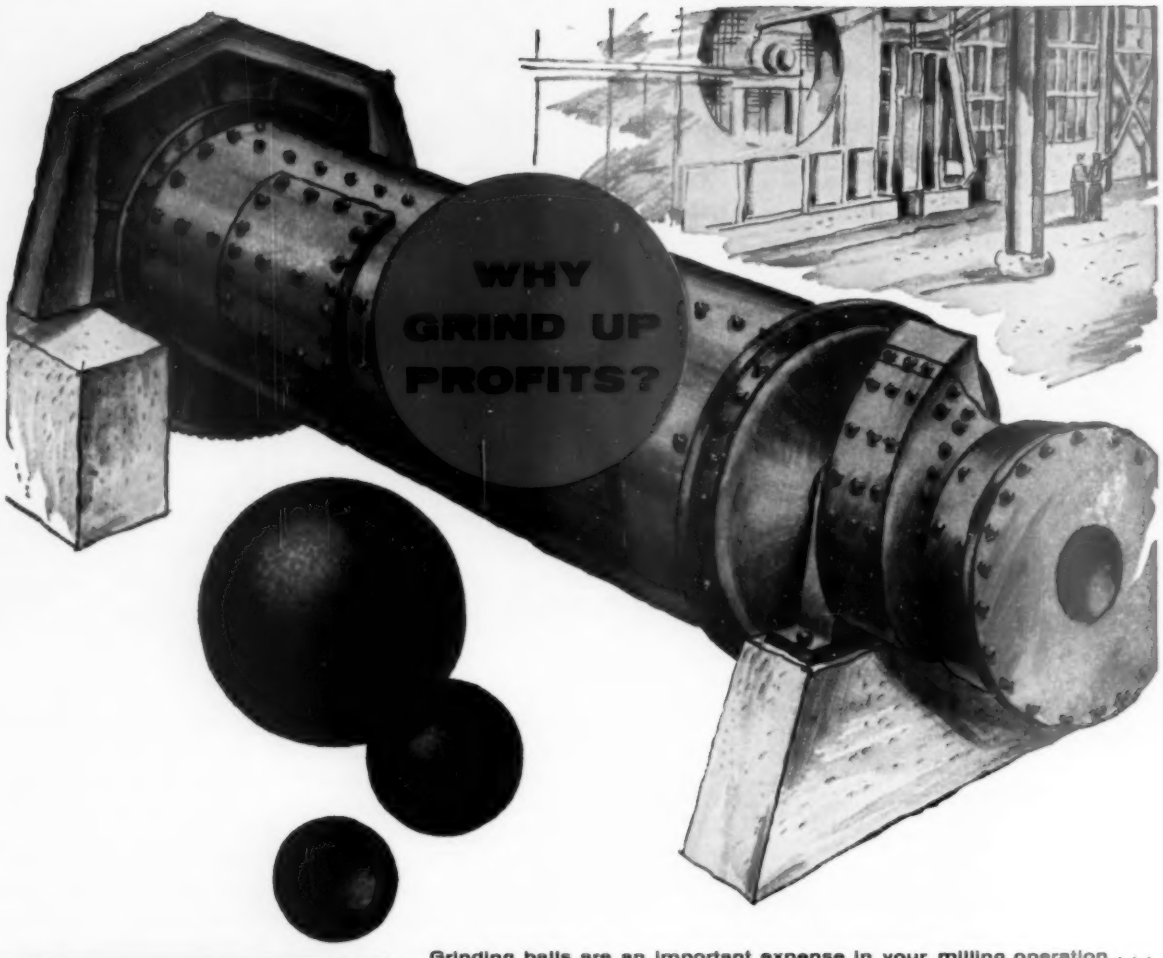
Here it might be a good idea to review briefly the function of all this equipment in HMS. The raw feed enters the separatory vessel containing "heavy media," a dense fluid of predetermined specific gravity made with a suspension of finely ground ores in water. The heavier specification material sinks, and the lighter, nonacceptable particles float.

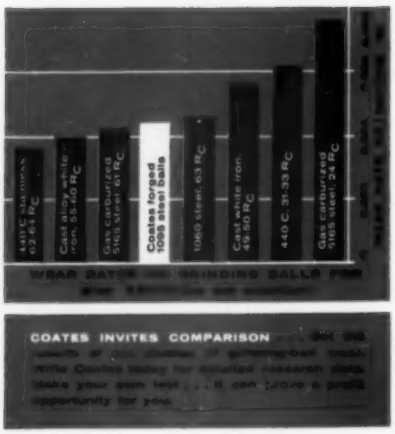
Separated products are drained and washed on the screen. Drained media is pumped back into the circuit, while sprays remove the remaining attached fine media particles from the gravel (and in this case, sand) on the screen. Diluted media goes to the magnetic separator, which segregates magnetic from non-magnetic foreign solids, for cleaning before returning to the circuit.

The densifier dewaters the media and controls the rate of flow back to the separatory vessel to maintain proper media balance and specific gravity in the HMS vessel. Before being returned to the media circuit, reclaimed media passes through demagnetizing coils.

Merritt-Chapman & Scott originally intended to process a 1½ x 8 mesh material in the 54-in. separatory vessel. This was a true pioneering venture, for up to this time we had heard of no one who had ever tried to make heavy media separations in a

Please turn to page 140




Cast alloy white iron, 55-60 Rc
Gas carburized 5165 steel 61 Rc
Coates forged 1095 steel balls
1060 steel, 63 Rc
Cast white iron, 49-50 Rc
440 C, 31-33 Rc
Gas carburized 5165 steel, 24 Rc
GRINDING BALLS PER

Grinding balls are an important expense in your milling operation . . . now you can have new scientific proof of Coates Carbex Grinding Balls' ability to keep costs down and production up. In our continuing research to improve our product we recently had tests conducted of various types of grinding balls using a revolutionary new technique of marking samples invisibly. Ninety-eight per cent of the balls charged into an operating cement finishing mill were recovered and identified after thousands of gruelling grinding hours. Laboratory examination proved that Carbex Triple-Forged Grinding Balls, costing only a few cents per pound, showed little wear . . . were actually a much better buy than balls with slightly better performance which cost ten to twenty times as much.

Continuing research by Coates has produced a better grinding ball . . . low in cost, high in performance. Coates Carbex Triple-Forged Grinding Balls are rounder, hardened for performance, and toughened for stress by efficient modern methods. Specify Carbex balls, proven your best buy.

CBSS-1

COATES INVITES COMPARISON

Write Coates today for detailed research data. Make your own test . . . it can prove a profit opportunity for you.

Write for prices . . . All sizes—½" to 5" carried in stock for immediate shipment.

COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

COATES STEEL PRODUCTS CO.

GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

Enter 1107 on Reader Card

Lima Austin-Western Model 4248 overhead eccentric roller bearing Jaw Crusher

LIMA A-W 42x48-in. Jaw Crusher produces more rock for less

Speed up crusher output with giant Lima Austin-Western 42 by 48-in. overhead eccentric roller bearing Jaw Crusher. Quality built to outperform! Oversized shafts and roller bearings for extra strength and durability. Extra-deep jaws of tough manganese steel form smaller, sharper and more efficient crushing angle.

main frame is practically unbreakable. Low alloy, high strength 3-in. steel plate gives frame tremendous strength in proportion to its weight.

flywheels are heavy castings, precision machined to proper balance. Split-type hubs simplify flywheel removal. Flywheels are key-locked into place, can't back off in operation.

pitman and shaft assembly can be easily removed through crusher frame top. Cartridge-type housing holds assembly in place, eliminates possibility of loose bearings.

bearings—Both main and pitman bearings are oversized and self-aligning to permit some shaft deflection, and deviation is minimized by locating the bearings close together. Frame absorbs part of shock load as main bearing center lines are within sides of main frame.

Bearings are protected by a simple-type steel labyrinth seal which resists entrance of dirt and seals in lubricant. Bearings may be easily removed by use of a hydraulic system furnished with this model.

capacity—What the Model 4248 can do for you may be seen from the fact that it handles 240-360 tons an hour when set at 5-in. discharge opening; estimate based on 2700 lb. per cu. yd.

Lima Austin-Western also produces a complete line of crushing and screening equipment and portable and stationary plants. Other smaller sizes of roller bearing Jaw Crushers are also available.

Profit from our 73 years' experience manufacturing Jaw Crushers and equipment for pit and quarry. Engineered and built to *produce more rock at less cost!* See your Lima Austin-Western distributor now or write us for free bulletin.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

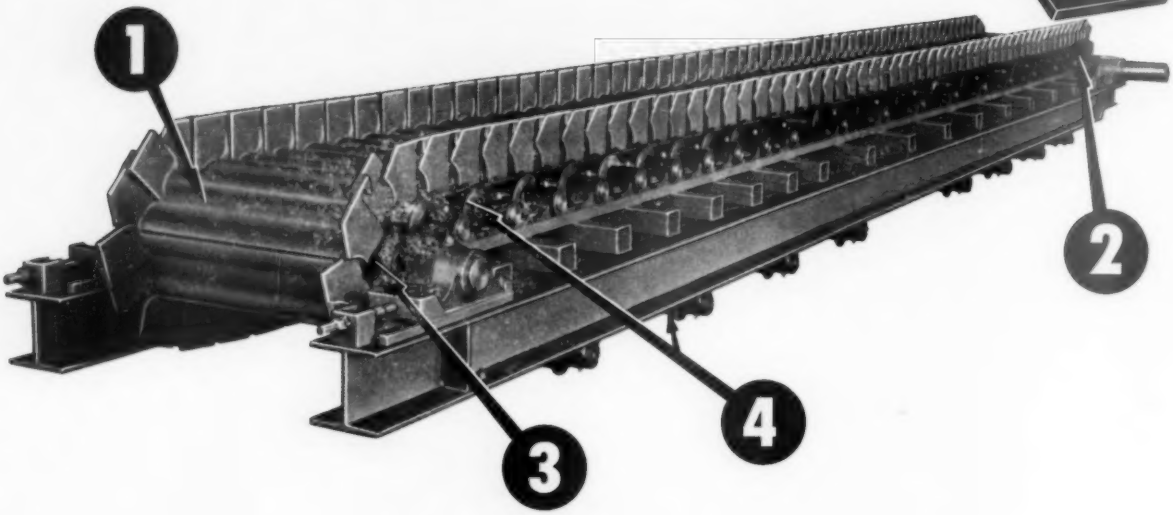
BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

5928

Enter 1057 on Reader Card

WHERE WEAR COUNTS!



TISCO® PAN FEEDERS

❶ **FEEDER PANS** — Hammered by tons of heavy rocks and ore every minute, but tough TISCO Manganese Chrome Steel pans lick impact and abrasion, outwear ordinary pan feeders 5 to 1.

❷ **HEAD SPROCKETS** — One break-down here flattens production. For dependable durability Manganese Steel does the job.

❸ **IDLERS** — Manganese Steel in this vital part keeps idlers busy, smooth running.

❹ **ROLLERS** — When each roller must continually shake off shocks and abrasion nothing wears like Manganese Steel.

Picture tons of heavy, abrasive material smashing down on this TAYLOR-WHARTON Pan Feeder, month after month without a breakdown. The reason — tough TISCO Manganese Steel soaks up shock and abrasion, keeps production climbing, maintenance down. For further information write to:

TAYLOR-WHARTON CO.

DIVISION OF HARSCO CORPORATION

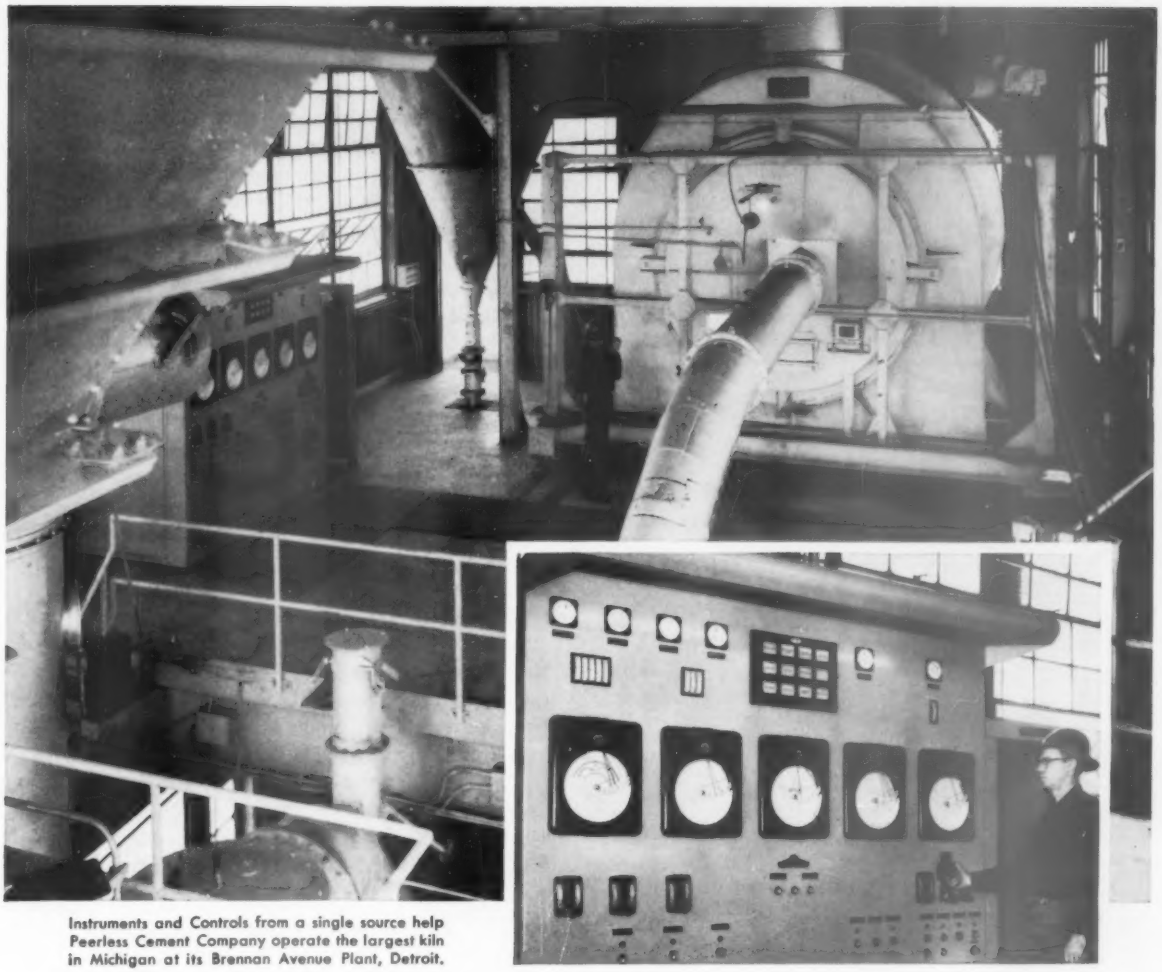
Established 1742

HIGH BRIDGE 4, NEW JERSEY

PLANTS: Cincinnati, O. — Birmingham, Ala. — Easton, Pa.

SALES OFFICES: New York — Chicago — San Francisco

Enter 1068 on Reader Card



Instruments and Controls from a single source help Peerless Cement Company operate the largest kiln in Michigan at its Brennan Avenue Plant, Detroit.

This giant kiln gives peak performance longer with Bailey Controls

The Peerless Cement Company of Detroit demands maximum capacity, uniform production and low fuel rate from its largest kiln . . . and Peerless gets it!

They do it with a Bailey Control System that gives them complete control of combustion, clinker cooler, and other kiln variables.

The system keeps continuous chart records of 11 important variables, including temperatures, drafts, air flow, kiln speed, fan speed, % oxygen, and % combustibles.

All this is done so dependably that the kiln often makes week-long runs without being touched.

All recording receivers in the Bailey System are plug-in components—easily removed, regrouped, or replaced to meet changing requirements. Additional records are added simply by plugging in receivers on existing recorder cases. Your Bailey Engineer can help you plan for peak performance — call him or write for your Bailey Kiln Control Folder.

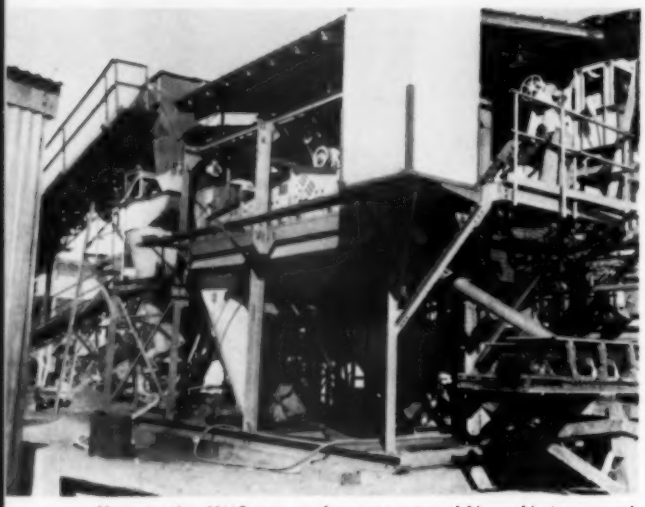
C115-1

BAILEY METER COMPANY

1039 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

Enter 1067 on Reader Card



Here is the HMS set-up for processing 1½ x ¼-in. gravel. The cone in the center is a hopper beneath washing and drainage screen; behind it is the separatory cone which treats the fine sand fraction

Glen Canyon *continued from page 135*

commercial sand and gravel plant where the rather fine sand fraction was included.

Unfortunately, this pioneer effort yielded low tonnage and unsatisfactory results. Studies showed that the coarse and the fine fractions should be treated separately. Furthermore, laboratory testing indicated that a deep, quiet, pool HMS vessel would produce a specification fine sand fraction with higher recovery of usable gravel.

Accordingly, a cone-type HMS vessel was added for the sand fraction, and the sand and gravel are now treated separately. Operating results have proved the laboratory findings to be correct. The two HMS installations operate side by side under the same roof, and each HMS unit requires one operator per shift.

The sand to be treated in its HMS section is first processed in the washing tower, then stored in bins. Similarly, the coarse gravel fraction goes to its bin. Under the bins are electrical vibrating feeders that dole out the individual sizes to the proper HMS plant by way of belt conveyors. In each case, the float fraction is wasted and the sink is stored. Before going to its cone separatory vessel, the sand fraction is dewatered on a small low-head screen. This keeps the water content of the sand at a nearly uniform figure; otherwise, variables in water content might upset the specific gravity of the media in the cone. The media loss on the difficult sand fraction is around 1 lb. per ton of material processed.

About 10 tph. is recovered from the sand HMS section and about 85 tph. from the 54-in. spiral. However, it must be pointed out that if the sand could be treated in the spiral and the coarse fraction were treated in the cone, the tonnage per section would remain about the same. Remember that capacity is a function of the size of a section—if larger tonnage is needed, larger screens, cone, densifier and magnetic equipment are obviously necessary. The horsepower requirements of the two units per ton recovered are practically identical, and both systems use the same general plan for recovery of media. The loss of media in the coarse section is in the 1.3 lb. per ton range, but the fact that this is higher than the sand loss can be partly attributed to capacity factors.

The HMS plant treating the coarse gravel receives it as a bulk material—1½ x ¼ in. After HMS treatment, the sink fraction is re-screened, re-washed and stored on the ground. The sand fraction from the other HMS plant is blended with the washed natural sand by two reclaim belts that converge to form a single pile of ground-stored finished material. Weighing feeders meter out the two sands in the desired proportions.

The feed to the 54-in. spiral contains 30 percent float material and 70 percent sink; the figures for the sand fraction are similar. The cone vessel uses a 60 percent magnetite-40 percent ferrosilicon media, while the spiral vessel uses 40 percent magnetite and 60 percent ferrosilicon.

The present two HMS plants will be incorporated into the larger plant without additional HMS equipment. Since sand seems to be in short supply, plans are on the board to use a rod mill to grind some of the HMS sink fraction into sand, blending it with the natural and HMS sand. The pit is deficient in the 3 x 6-in. fraction that is the nominal top size for mass concrete in dam work of this kind. Fine sand may also be deficient, so a 1,400-tph. feed to the new plant will net 1,000 tph.

The HMS sand and gravel will be used on the upstream and downstream faces of the dam to a thickness of 10 ft. and at critical points where repairs will not be easy. This will use up some 700,000 tons of HMS aggregate. The balance of the 5,000,000 cu. yd. mass will be conventionally washed sand and gravel but will contain the light rocks that are removed by HMS.

Finished material is hauled 5.2 miles over company-owned roads to the dam-site storage facilities. When the larger plant goes into operation, a fleet of belly dumpers pulled by tractors whose gasoline engines have been replaced by 300-hp. diesels will haul 30 tons per load. Ten such units

are expected to be in constant service. Merritt-Chapman & Scott will do the hauling.

Construction operations included the erection of the highest steel arch bridge in the U. S. at a point a short distance below the dam site. The bridge is now open to the public, and the construction site can be reached from either the Arizona or Utah side of the river. The offices of the contractors and the Bureau of Reclamation, batching plants and aggregate storage facilities are on the Utah side. All portland cement for the dam proper will be hauled across the bridge from Arizona.

By this fall, the new plant of Phoenix Cement Co., a division of American Cement Corp., will be in operation near Clarksdale, Ariz. This plant will supply the cement for the dam itself. Cement for the early work was produced by the Cushenbury, Calif., plant of Permanente Cement Co.

According to some reports, about 60 pozzolans were examined for possible use in the concrete for Glen Canyon dam. This was reduced to three, and finally a natural pozzolan from Arizona was selected. The Bureau of Reclamation will supply the pozzolan. The mass concrete will contain 1 sack of the pozzolan to 2.5 sacks of Type II, low-alkali cement, it was indicated. **END**

EQUIPMENT REFERENCE

General:

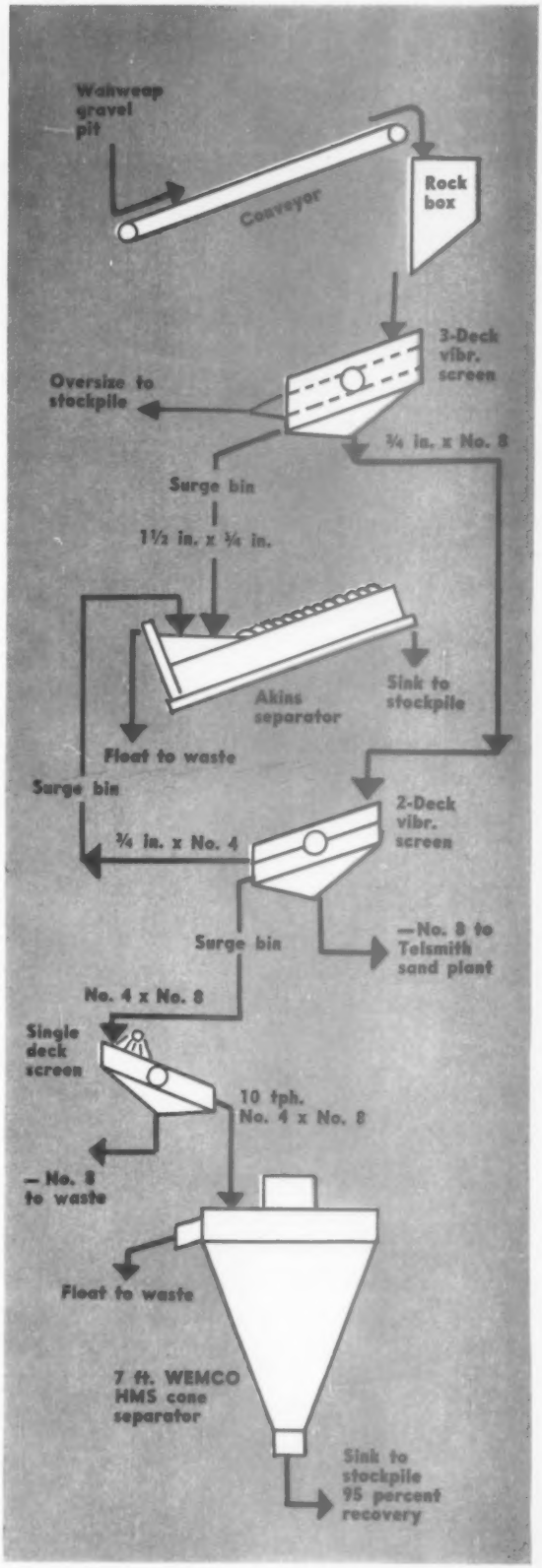
Dragline, 6½-cu. yd. Lima		Baldwin-Lima-Hamilton Corp.
Trucks	Tractors	Mack Motor Truck Corp.
	Engines, 300-hp. diesels	Cummins Engine Co., Inc.
	Belly dumpers	Cook Bros. Equipment Co.
Weighing feeders (2)		Merrick Scale Mfg. Co.
Primary feeder		The T. L. Smith Co.
Sand dewatering screw, 30-in.		
Water scalper, 7-spigot		
Storage bins		Butler Bin Co.
Vibrating feeders		Syntron Co.
Screens (200-tph. plant)		
—5 x 10-ft., wet, 3-deck		The T. L. Smith Co.
—5 x 10-ft., wet, 2-deck (2)		
—4 x 10-ft., wet, 3-deck		
—4 x 6-ft., low-head		Allis-Chalmers Mfg. Co.
Conveyor belts		The B. F. Goodrich Co.
Conveyors		Barber-Greene Co.

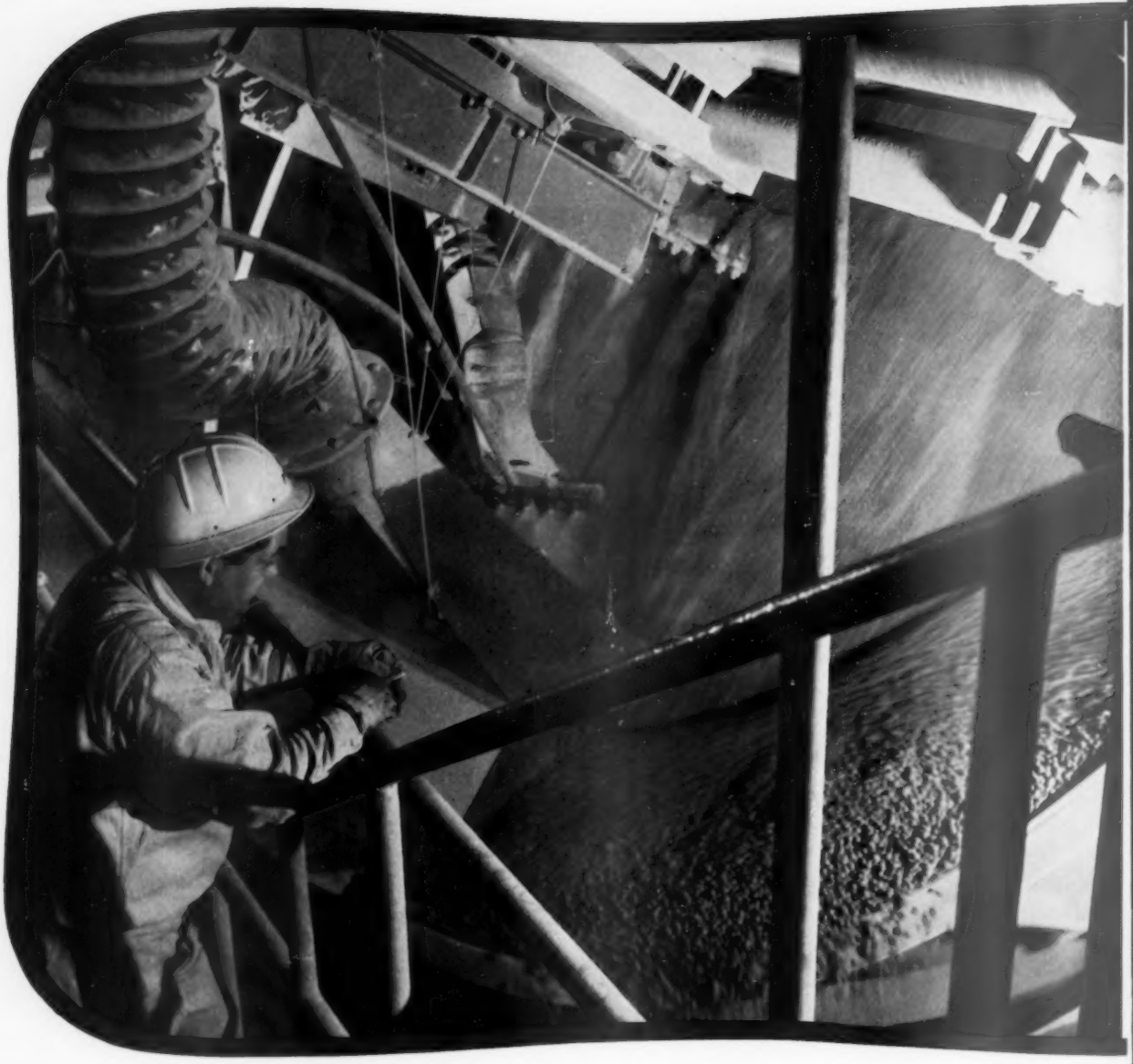
HMS plant (sand):

Engineered and supplied by South Western Engineering Co.	
Cone separator, 7-ft., 3 hp.	Western Machinery Co.
Densifier, 24-in., 1½ hp.	
Media pump, 4-in., 25 hp.	
Wash hopper pump, 2-in., 7½ hp.	
Washing and draining screen, 3 x 16-ft., single-deck, 5-hp.	Allis-Chalmers Mfg. Co.
Magnetic separator, 30 x 24-in.	Dings Magnetic Separator Co.

HMS plant (gravel):

Spiral-type separator, 54-in., 10-hp., 2 hp. (two motors)	Colorado Iron Works
Densifier, 30-in., 1½ hp., ¾ hp.	
Pump, 20-hp.	A. R. Wilfley & Sons, Inc.
Pump, 7½-hp.	
Washing and draining screen, 5 x 16-ft., single-deck, 15-hp.	Hewitt-Robins, Inc.
Magnetic separator, 36 x 30-in., drum-type, 1½ hp.	Dings Magnetic Separator Co.
Control center	Cutler-Hammer, Inc.





Pellets formed in revolving pan are fed to traveling grate for drying and pre-calcining.

Plan to stay ahead... MODERNIZE!

Pellets to profits

"COORDINEERED" Allis-Chalmers Equipment Paves Way to Increased Capacity at Diamond Portland Cement Co.

Progressive — that's Diamond Cement at Middle Branch, Ohio. Modernization — $5,000,000 worth — has meant an additional million barrels of *low-cost* production for this relatively small, but aggressively on-the-grow operation.

Significantly, Allis-Chalmers supplied much of the major equipment in this modernized plant. Wheel horse in the operation is a complete *ACL* kiln system — pelletizer to clinker cooler. Other Allis-Chalmers equipment includes two vibrating screens and a pair of 1000-hp ball mills. Associated electrical equipment was also supplied by Allis-Chalmers.

"Heads-Together" Approach to Application

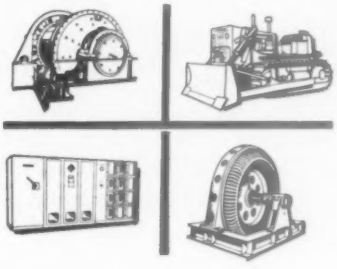
Allis-Chalmers manufactures a most diversified line of processing and electrical equipment. Each product department is staffed with research, design, manufacturing and application specialists. "Coordineering" results from an interdepartment exchange of ideas and the correlation of specific skills. Integration of thinking, planning and engineering precedes integration of equipment.

Help for You or Your Consultants

Arrange a meeting with your A-C cement team. See your local representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.

Allis-Chalmers Products for Cement Industry

Earth-Moving Equipment
Kilns Grinding Mills Crushers
Vibrating Screens
Dryer-Coolers Motors Control
Switchgear
Unit Substation Steam Turbines



ALLIS-CHALMERS A-C A-5928-CM

ACL is an Allis-Chalmers trademark.

Enter 1053 on Reader Card

Conveyors, one piggybacked atop the other, lead from the left to top of second main tower. It contains screen, truck bin, two crushers. Blending plant is in foreground

Novel plant design pays off

by Kneeland A. Godfrey, Jr.

Arcole Midwest boasts a money-saving piggyback recycle belt conveyor and newly designed rotating screens for fines separation

THE ALERTNESS THAT LED Arcole Midwest Corp., a highway contractor, to diversify into the aggregates business shows up in the design of its crushed stone plant at Lemont, Ill., southwest of Chicago. A money-saving "piggyback" recycle belt conveyor and newly designed rotating screens for fines separation are highlights of the big 300-tph., $750,000 operation.

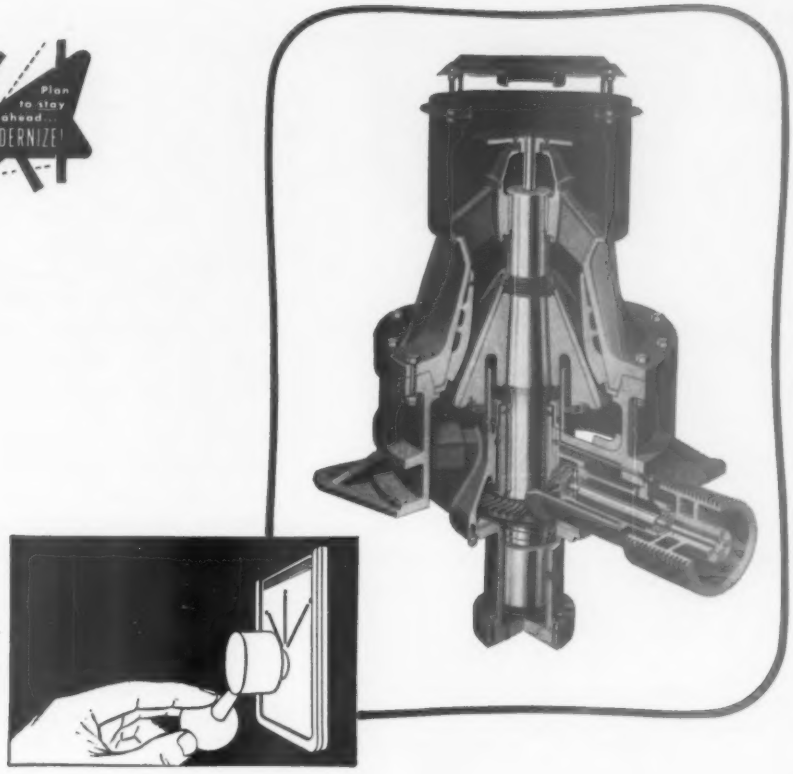
Arcole picked a good highway market in which to expand. For 1959, officials report, road construction should reach $150 million in Chicago's Cook County alone—and this without the now-completed $500 million Illinois Tollway program to swell the total.

The novel "piggyback" conveyor for recycling material from two tertiary crushers is one of the top plant features. The two third-stage crushers—an impactor and a roll crusher—are located in the plant's second crushing and screening tower. From these units, the usual return belt carries crushed rock up to the mid-point of the belt leading to the screen in the top of the tower. At this point, instead of chuting this product onto the existing belt or building a new conveyor system beside the main-line belt, Arcole tried a new approach.

The designers simply "piggybacked" the recycle system atop the main conveyor. This not only saves the cost of a supporting setup for the second belt, but also eliminates the need for a single main

Please turn to page 146

Plan to stay ahead... MODERNIZE!



Just a minute...

that's all it takes one man to change settings in a *Hydrocone* crusher

Flip a switch . . . adjustment to precise product size is that easy. Compensation for wear and emergency unloading are also one-man, one-minute operations. Only Allis-Chalmers gyratory crushers offer this remarkable speed and convenience.

Bulletin 07B7145C tells the complete *Hydrocone* story. Get a copy from your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.

Hydrocone is an Allis-Chalmers trademark.

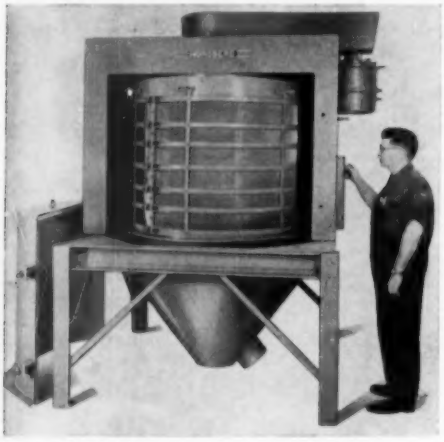
A-C ALLIS-CHALMERS

A-5929-CM

Enter 1052 on Reader Card

Novel design *continued from page 144*

Stone reclaimed from tunnel (lower right) moves to truck bin, then out to canal off to left



The cylindrical V-screen looks like this when the side plate is removed for inspection or screen replacement

belt large enough to handle both flows of rock. It's a neat trick!

The second design innovation is the pair of unique V-screens used in the blending operation. These are big, rotating cylindrical units fed evenly around the entire periphery by a vaned disc which rotates at screen speed. Centrifugal force pushes the feed out and against the screen surface, and with more force than in the usual vibrating screen, where the rock's weight is the only pressure against the screen cloth or plate.

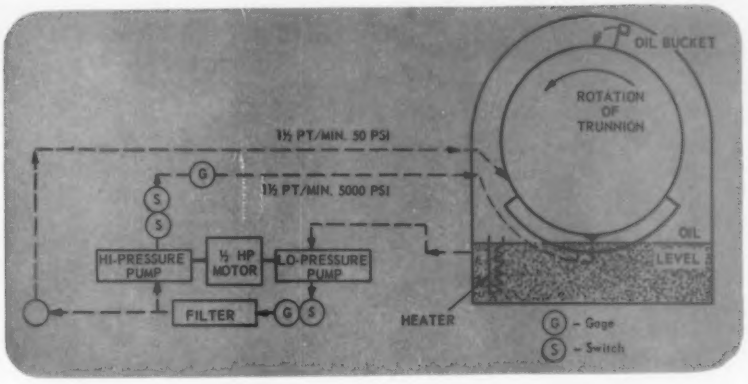
The gyrating action lifts the stone off the surface and permits small particles to sift through the big stone and past the screen. Arcole is getting twice the screening capacity of a vibrating screen of the same 4 x 12-ft. size for materials in the 5-100 mesh range. Yet, because of the unit's gentle gyrations and the fact that the stone strikes it at right angles, screen-cloth life is exceptional.

Location of the Lemont plant was carefully chosen. By placing it beside the Chicago Sanitary and Ship Canal, Arcole not only got excellent transportation to local markets, but also low-cost rock. Several million tons of hard limestone were piled beside the 160-ft.- wide canal when it was built in the 1890's. Long a "white elephant" for the canal's builders, the Metropolitan Sanitary District of Greater Chicago, the rock is now being bought by firms like Arcole at about 10 cents per cubic yard, much less than it would cost if quarried.

Arcole also pared costs by locating near a navigable waterway. Up to three barges a day carry rock cheaply from Lemont to the firm's other ma-

Please turn to page 148

From surge hopper, stone goes to first screen-crush tower, center. Minus 1 ½-in. material goes to washing plant, background. Washed product is then recombined with crushed oversize, travels up belt at right



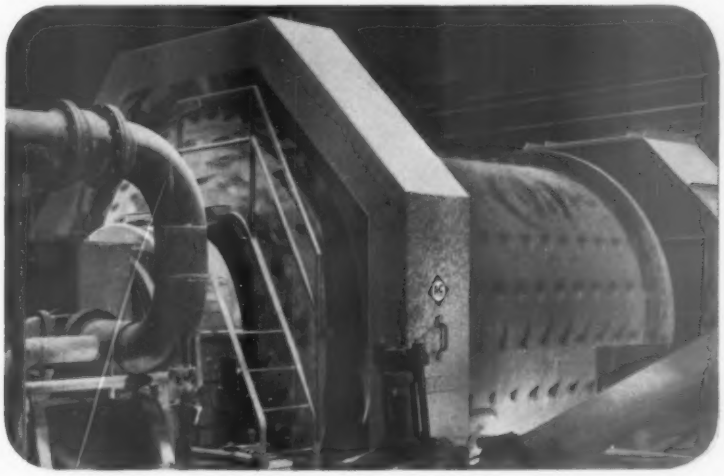
Floating start, ride and stop for big mills

New Lubritrol system provides constant lubrication for trunnion bearings

The new, bigger Allis-Chalmers mills now grinding out profits in progressive rock products plants actually *float on oil*. No bearing-wearing starts. Horsepower waste is kept at minimum. No dry sliding after shutdown. All functions of the *Lubritrol* system are automatic . . . controlled by foolproof pressure gages and switches. Filter removes contaminants.

When you modernize your rock products operation with a bigger mill, insist on Allis-Chalmers — the only mill that gives you the positive protection . . . the operating and maintenance economy of *Lubritrol* constant lubrication.

For complete information, see your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.



Plan to stay ahead... MODERNIZE!

Lubritrol is an Allis-Chalmers trademark.

ALLIS-CHALMERS

A-C

A-5934-CM

Enter 1051 on Reader Card

Novel design *continued from page 146*

terials yard at Fullerton Ave. on Chicago's north side. Shipment through Chicago's network of waterways saves an expensive truck haul of 40 miles.

The "quarry" phase of the Lemont operation consists simply of loading 5 rear-dump haulers with a 2½-cu. yd. shovel and bringing the rock 1¾-miles to the plant. Haul distance was ½ mile when the plant was opened, but gradually increased as nearby rock was consumed.

Newest unit in the hauling fleet is a 4-wheel, 35-ton capacity tractor-trailer rear dump. Superintendent Robert McNelis is enthusiastic about the productivity and low upkeep of the hauler. He notes that it carries far more than the 22-ton trucks the firm uses, and yet has only four tires, all interchangeable. Because tandem wheels at the rear are eliminated, there is no danger of a rock jamming between a pair of tires and damaging them.

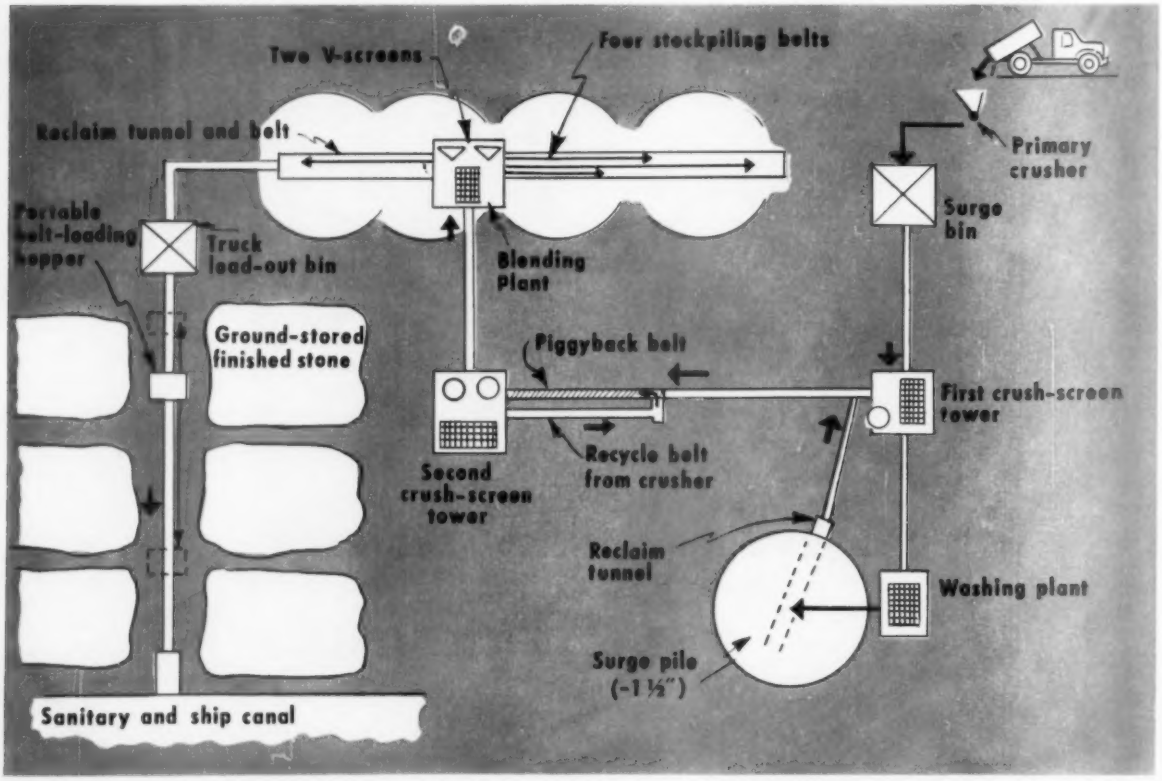
A vibrating feeder evens the flow of rock from truck-dump hopper to 32 x 40-in. jaw crusher. In this first step the limestone, ranging in size up to 3-ft. cubes, is reduced to minus 6 in. Some flexibility of operation is provided by a 150-ton surge hopper next in the process flow. Tentative plans call for a large-capacity surge pile at this point which would permit greater flexibility, such as crushing rock to special order even though initial stages of the plant are not operating.

Next step is a two-deck screen which scalps off plus 3-in. rock to a 4-ft. gyratory crusher and sends minus 1½-in. material to a washing plant where clay and waste are removed. Scalping screen and crusher are in the first of the plant's four processing towers.

The washing plant is a three-deck screen with water sprays on each deck. Dirt left in the broken rock 60 years ago when the canal was dug is effectively removed by the high-pressure sprays. Material under ¼ in. is sent with used wash water to a waste pond; larger sizes are returned to the main conveyor leading from the first scalping screen. To do this job a reclaim belt pulls rock out of a surge pile. The main belt also carries rock from the 4-ft. gyratory and the 1½ x 3-in. middle fraction from the screen. The three sizes, now recombined, go to a second tower in the main processing line.

At this second screening and crushing tower, on a typical job, plus ¾-in. rock is scalped off the top of the 2½-deck screen and sent to the impactor beneath. The middle fraction, say ¼ x ¾ in.,

Please turn to page 150



Plan to stay ahead MODERNIZE!

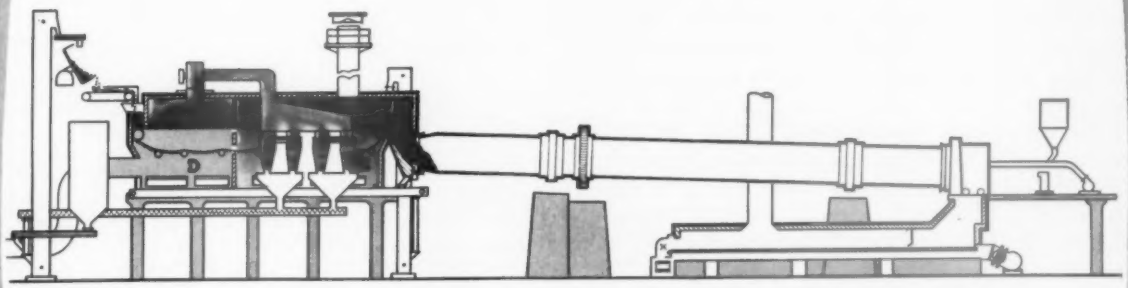
ACL pellet process cleans up cement making

Pelletizing of raw materials makes possible the dust-free operation of the *ACL* "double-pass" traveling grate system.

Along with clean production, making cement with pellets affords a barrel of bonus benefits — product reclamation, maximum burning efficiency, power savings, small space requirements.

How *ACL* "Double-Pass" System Works — In first pass (A to B) 1800° gas from kiln partially calcines feed in section nearest kiln. Gas temperature is reduced to 500°. Cyclones reclaim air-borne dust. In second pass (C to D) green pellets are dried and heated to about 500°. Gas stripped of heat and dust is exhausted in a mere wisp.

For the complete story, see your A-C man or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers, Ltd., Box 37, Montreal, Quebec.



ACL is an Allis-Chalmers trademark.

ALLIS-CHALMERS

A-5930-CM

Enter 1050 on Reader Card

Here, up to three 1,200-ton barges a day are loaded for the trip to Arcole's Fullerton Ave. yard. Movable lower belt fills barge from side to side; two air winches in foreground pull barge under belt, discharging stone

Novel design

continued from page 148

drops to the 54 x 24-in. double-roll unit. The product of these two crushers is recycled to the screen by the "piggyback" belt conveyor. Minus ¼-in. material through the screen goes directly to the final major processing stage—the blending plant.

The blending plant has two production units, a 3½-deck vibrating screen and the pair of V-screens. Never-failing centrifugal force and a vertical gyrating action separate minus 5-mesh fines from larger material in the V-screens. The minus 5-mesh screenings fall beneath the screens to one pile; larger 5/16-in. x 5-mesh chips are conveyed to another pile at the side. Both fractions are in heavy demand for use in Arcole's four asphalt plants in the Chicago area.

The two V-screen products, plus three other final products taken from the vibrating screen, are stored by stationary stacker belts in a neat row. The five piles are placed over a reclaim tunnel stretching for 200 ft. beside the plant. Precise blending of sizes to meet any rock specification is possible with the reclaim belt and gates beneath each pile.

Rock travels smoothly from reclaim belt to a truck hopper used for shipping to local jobs on Chicago's south and west sides. From this point, the stone may be sent by another belt to barges on the nearby Sanitary Canal. Alternately, the rock may be dropped directly into trucks for shipment to nearby jobs or to the Arcole asphalt nearby on the Lemont site. For the winter months, additional finished rock has been stored by three 6-cu. yd. trucks in seven piles alongside the barge-loading conveyor. In all, perhaps 200,000 tons of crushed material is on hand for the busy warm-weather building period. Most of it is stored on the ground, not over the reclaim belt. When this ground-stored material is called for, a 2½-cu. yd. clamshell crane loads it into a field hopper which feeds the barge-loading belt. Alternately, the finished stone is hoisted by a 3-cu. yd. tractor shovel into delivery trucks for use on jobs nearby.

Barge loading is simple and efficient, thanks to clever engineering. An Arcole-designed shuttle belt moves in and out from shore to fill each barge completely from side to side. Two air winches supplied by an air compressor spot the barge lengthwise. To move the loading barge upstream, for example, one winch takes up on its line (attached to the upstream end of the barge) and the other pays out line. This setup can load three 1,200-ton barges a day.

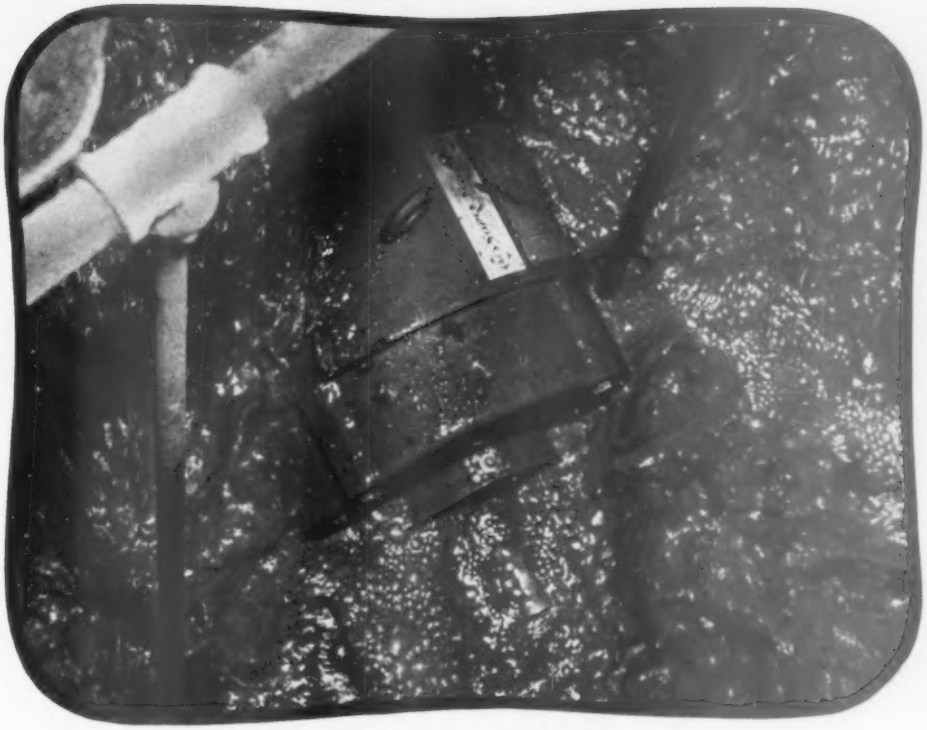
Arcole has rented six barges and has them moved by a contracting hauler. When the Fullerton Ave. yard calls for more rock, trains of 2 or 3 barges push upstream to the Chicago River's North Shore Channel which runs by the yard.

The Lemont rock plant was built originally as a 200-tph. unit in 1957. But in the last two years, by adding the impactor, a larger roll crusher (the 54 x 24 in. replaced a 22 x 40 in.) and the two V-screens, capacity was upped to near 300 tph., and better fines control was achieved. Though the original design was made by a consulting firm, Arcole planned the new equipment additions.

A. A. Persson is project superintendent at the Lemont rock plant. Nathan B. Bederman is principal owner and president of the firm. Arnold Kincaid has charge of all equipment. **END**

MAJOR EQUIPMENT USED AT LEMONT STONE PLANT, ARCOLE MIDWEST CORP.

Rear-dump quarry trucks, 22-ton (4)	Euclid Div., GMC
Rear-dump unit, DW 21 tractor	Caterpillar Tractor Co.
Rear-dump trailer, 35-ton	Athey Products Corp.
Power shovel, 2½ cu. yd.	Northwest Engineering Corp.
Primary processing:	
Jaw crusher, 3240	Austin Western Works, Baldwin-Lima-Hamilton Corp.
Belt conveyors, 1,250 ft.,	Barber-Greene Co.; Joy Mfg. Co.
Conveyor belts, 26 in.	Boston Woven Hose & Rubber Co.; Goodyear Tire & Rubber Co.
Surge bin, 150 ton	Blaw-Knox Co.
Scalping screen, 4 x 8 ft., 2 deck	Simplicity Engineering Co.
Gyratory crusher, 4 ft.	Traylor Engineering & Mfg. Co.
Washing plant:	
Vibrating screen, 4 x 14 ft., 3-deck	Iowa Mfg. Co.
Second crush-screen tower:	
Screen, 2½-deck, 6 x 16 ft.	Allis-Chalmers Mfg. Co.
Impactor, model 3640 twin-shaft	Iowa Mfg. Co.
Roll crusher, 5424	Pioneer Engineering, Div. of Poor & Co., Inc.
Blending plant:	
Screen, 3½ deck, 6 x 16 ft.	Allis-Chalmers Mfg. Co.
Screen heater	Screen Heaters, Inc.
Rotary V-screens (2)	Nordberg Mfg. Co.
General:	
Plant fabricators	Philip Zweig & Sons, Gary, Ind.
Rehandling clamshell crane, 2½ cu. yd.	Northwest Engineering Co.
Tractor shovel, 3 cu. yd. model 175A	Clark Equipment Co.
Stockpiling trucks, model K11 (3)	International Harvester Co.



An open motor did what no other motor could... in a mud bath

This Super-Seal motor with *Poxeal* insulation and protected bearing was not fouled by mud. An Allis-Chalmers customer, in a frequently flooded area, required a motor that could readily start even after prolonged immersion in mud.

The "dirtiest mud available" was used in conducting the successful tests in the A-C Motor Laboratories.

Motor user requirements like this form the basis for A-C pioneer-leadership in motor development. Motor buyer needs created the most complete line of integral-horsepower motors in industry. Induction, dc, wound-rotor, synchronous, gear, tube-type and *Synduction* motors, and now *Super-Seal* motors! And, if these lines don't fill your need, A-C engineering excels in special design.

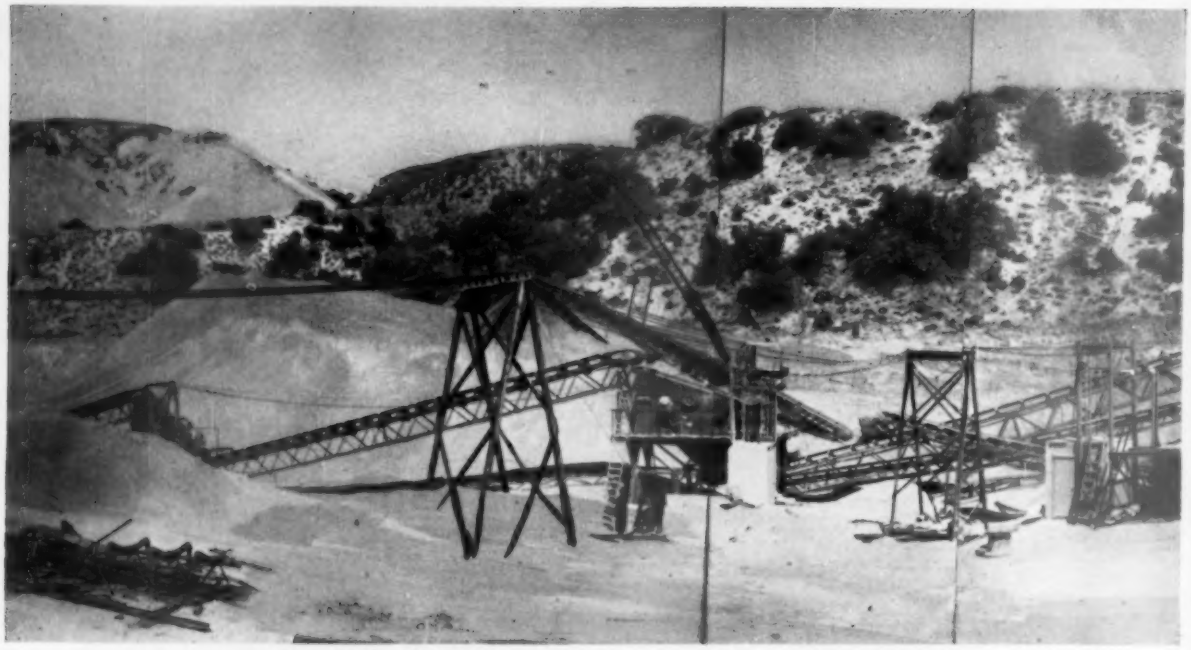
Motor users in the cement and other rock-product industries can benefit from this pioneer-leadership. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Super-Seal, Poxeal, and Synduction are Allis-Chalmers trademarks.

ALLIS-CHALMERS

A-1005-CM

Enter 1076 on Reader Card



Over-all view of plant shows primary crusher (left), scalper (center) and secondary crusher,

Motorized head pulleys

MOTORIZED HEAD PULLEYS have found an ideal use on the belt conveyors of Terminal Construction Co.'s semi-portable crushing and screening plant now producing aggregate for a highway job near Lebec, Calif.

In motorized head pulleys, the drive motor and gear-reduction unit are inside the pulley. This means that when the job is completed, the conveyor galleries can be disassembled in lengths to suit highway requirements and loaded by crane, with no "gingerbread"—motors, gear-reduction units, V-belts—at the head of the conveyor to worry about.

Guy F. Atkinson Co. has the contract for the year-long job of widening and improving parts of U. S. 99, California's most heavily traveled north-south road, in the "Grapevine" area north of Los Angeles. Aggregate for the job is not plentiful in the area, but Terminal Construction Co., a commercial producer with a second plant at Littlerock, Calif., located a satisfactory deposit near Lebec. The haul to the aggregate's point of use is practically all down-grade.

The Littlerock plant operates under the name of Terminal Rock and Sand Co. John K. Larson, owner of both plants, gained his experience with the motorized head pulleys at Littlerock where 15 of the pulleys are in use. (ROCK PRODUCTS described this operation in its December, 1955, issue, page 94, when the plant was operated by a former owner.)

General layout of the Lebec plant is quite simple, involving a primary and a secondary crusher and two screens—one a scalper that removes some of the unwanted excess fines, the other a final sizing screen.

The motorized head pulleys are used on all of the 13 or more belt conveyors that are in service. An additional belt conveyor is being installed as a second belt for handling fine waste. The maximum horsepower used on any of the conveyors is 30 hp.

Other accessories eliminated by this type of pulley include motor stands, mounting brackets, outside gearhead motors or reducers, and chain guards or jack shafts. No chains, sprockets or sheaves are exposed to weather and dirt, and there

final screen and storage piles (right)

When the job is completed, conveyor galleries can be disassembled in lengths to suit highway requirements and loaded by crane with no "gingerbread" to worry about

prove profitable

are no protruding parts to catch workmen's clothes or to be accidentally hit and damaged.

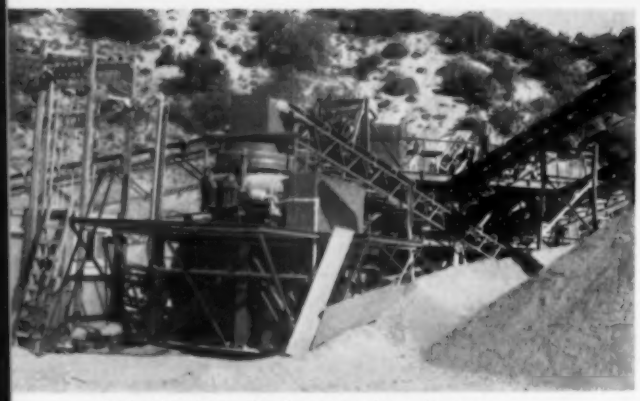
Motorized head pulleys also cut maintenance time and costs. No oiling and tightening of chains or belts, realignment of jack shafts, removal or replacement of guards are needed. Only monthly oil check, pillow-block greasing and annual oil change are required.

Installation of the pulley takes but a few minutes more than the time normally required for a standard idler pulley alone. Another saving is realized when a change of drive power is desired—the unit can be quickly and easily moved from one conveyor to another.

No maintenance platforms or catwalks are needed, permitting lighter supports. The entire head pulley requires no more room than a regular idler pulley, so headroom requirements are at a minimum.

However, there are some disadvantages without walkways or platforms. If replacements are needed, then the whole unit must be removed. This is not easily done without access to the head of the conveyor. Then, too, in event of failure of any part,

Motorized head pulleys like the one visible at the discharge end of this belt are used on all conveyors



This 4¼-ft. standard cone crusher takes care of secondary crushing

Excess fines are scalped out at this screen

Head pulleys *continued . . .*

the whole unit must be replaced with a complete, duplicate assembly. Conventional drive assemblies often may be reworked by simply substituting the worn or broken part right on the conveyor.

The flow of material through the plant is essentially as follows: A tractor-dozer pushes the pit-run to a feed hopper where the material is fed to a belt serving a 22 x 36-in. jaw crusher. Following the crusher, the scalper screen removes a dry waste sand, and the material is sent to waste piles by multi-conveyors arranged in series.

Oversize rock from the scalper screen goes to the secondary crusher, a 4¼-ft. cone, and intermediate goes to the 5 x 20-ft. wet screen used for final sizing. Sand is dewatered in a set of double 24-in. screws, and this material is stored on the ground by a belt conveyor.

Two sizes of processed gravel are being made, a minus ¾ in. and a 1½ x ¾ in. These two fractions are stored on the ground by individual belts. A third stacker belt is available for other sizes, if and when they are required. Finished material is reclaimed by a front-end loader. **END**

MAJOR EQUIPMENT REFERENCE

Motorized head pulleys, Schrock	Western Conveyor Co.
Troughing rolls	Stephens-Adamson Mfg. Co.
Screens	Hewitt-Robins, Inc.
Tractor-dozer	Caterpillar Tractor Co.
Primary crusher	Iowa Mfg. Co.
Secondary crusher	Nordberg Mfg. Co.
Sand dewatering screws	Eagle Iron Works
Front-end loader	Clark Equipment Co.
Plant design	Arthur E. Howland Co., Engineers

5 x 20-ft. wet screen in background makes final separations. Finished product is stored by belt conveyors in foreground

Smidth

symetro drives

FOR SMIDTH GRINDING MILLS

F. L. SMIDTH & CO.

Engineers and Machinery Manufacturers

11 West 42nd Street • New York, N.Y.

Copenhagen **London** **Paris** **Bombay**

Enter 1075 on Reader Card

What about cement imports?

UNITED STATES IMPORTS OF PORTLAND CEMENT (except white) declined somewhat to 3,110,000 bbl. in 1958 from 3,850,000 bbl. in 1957, though still remaining higher than had generally been anticipated by the industry. Imports of white cement declined rather sharply from 448,000 bbl. to 258,000 bbl. There were no large imports of hydraulic cement clinker in 1958.

Except for the usual seasonal variations, month-by-month data show no particular pattern of portland cement imports. The high of 510,900 bbl. was reached in July, the low of 117,800 bbl. in April.

The United States imported cement from 17 countries in 1958. The top five were Canada, 657,100 bbl.; Colombia, 473,900 bbl.; Belgium, 410,800 bbl.; West Germany, 325,100 bbl., and Sweden, 304,700 bbl.

A total of 68,500 bbl. entered Massachusetts, Rhode Island and Florida from Poland. These imports from behind the Iron Curtain caused some stir in Florida, as well as in the cement industry and in the press. Official data show no receipts of Polish cement since July, 1958.

As in each of the past several years, Florida was by far the largest user of foreign cement: 1,479,100 bbl. in 1958. Florida's percentage of the total declined, however, from 59 percent in 1957 to 48 percent in 1958. Of the 10 countries shipping cement into Florida in 1958, the largest quantities were from Belgium, 402,400 bbl.; Colombia, 308,800 bbl.; West Germany, 297,900 bbl., and the United Kingdom, 204,600 bbl.

Some significant trends were noted. Beginning in May, unusually large quantities of cement were shipped into Connecticut and Rhode Island from Sweden, Norway and Denmark, and complaints were heard that much of this cement was being "dumped"—sold below fair market price—in those states. In each of the last six months of the year, sizable quantities of Colombian cement were marketed in Puerto Rico, while in the same months Michigan took rather large shipments from Canadian producers.

Of the 25 customs districts reporting imports of portland cement (except white cement) in 1958, largest were Florida, 1,479,100 bbl.; Connecticut, 462,900 bbl.; Rochester, N.Y., 261,500 bbl.; St. Lawrence River, N.Y., 164,900 bbl.; Puerto Rico, 154,600 bbl.; Rhode Island, 152,100 bbl.; Michi-

Please turn to page 162

PORTLAND CEMENT IMPORTS BY YEAR
(U.S. bbl., excluding white cement)

1955	4,560,000
1956	3,600,000
1957	3,850,000
1958	3,110,000

IMPORTS BY MONTH, 1958
(U.S. bbl., excluding white cement)

January	190,000
February	171,700
March	181,400
April	117,800
May	272,100
June	178,000
July	510,900
August	319,500
September	306,300
October	377,600
November	220,200
December	265,100
Total	3,110,600

IMPORTS BY COUNTRY OF ORIGIN, 1958
(U.S. bbl., excluding white cement)

Canada	657,100
Colombia	473,900
Belgium	410,800
West Germany	325,100
Sweden	304,700
Norway	270,800
United Kingdom	209,700
Denmark	192,800
Poland	68,500
Israel	58,200
Yugoslavia	47,500
Egypt	32,600
Switzerland	19,500
Japan	18,000
Mexico	10,800
Dominican Republic	7,500
France	3,100
Total	3,110,600

Data obtained from Bureau of the Census

Enter 1034 on Reader Card

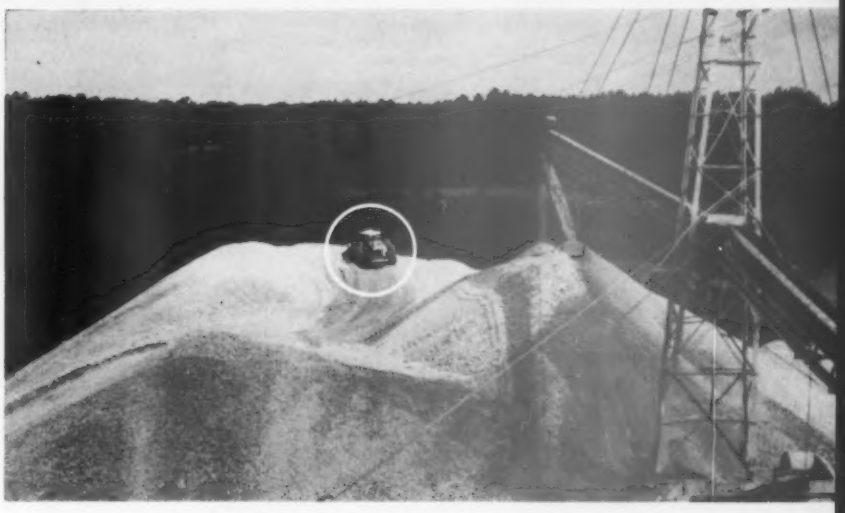
Switch in tractors means big savings

for Hedrick Gravel and Sand Co.

B. V. Hedrick Gravel and Sand Co., Salisbury, N.C. produces up to a million tons of gravel and sand yearly at its 2000-acre Rockingham quarry. Until a couple of years ago, the firm used two 120-hp crawler-tractors for clean-up and miscellaneous jobs. But, as is usual wherever footing is abrasive, track maintenance costs were sky-high. In addition, the crawlers took far too long to travel long distances between job assignments.

This situation, management realized, called for a mobile rubber-tired tractor. And time studies showing actual tractor *work time* indicated that probably only one of these new, mobile tractors would be needed:

The firm found what it was looking for in powerful, speedy, 218-hp LeTourneau-Westinghouse Tournatractor®. Of the switch in tractors, Gen. Mgr. E. A. Goodman, Jr. today says, "This single rubber-tired tractor certainly meets our need . . . it drives job-to-job very effectively." Adds operator Luin Tucker, "It's fast and makes my job twice as easy. It'll do more work than the two crawlers did, and maintenance is low."



Maintains stockpiles — With 12'-wide dozer blade, Hedrick's Tournatractor efficiently spreads conveyor-dumped gravel. With big, multi-disc air brakes — totaling 3,762 sq in. of brake surface — operator has sure, safe control, giving him confidence to work near pile's edge.

Illustrated and described here are a few reasons why Hedrick's rubber-tired L-W tractor gets more work done faster . . . safer . . . at less cost.

Why don't *you* check on savings possible with a LeTourneau-Westinghouse high-speed Tournatractor at your pit? Ask for details and demonstration. No obligation.

CT-2008-MQJ-1

Handles clean up — L-W Tournatractor cleans up around hoppers, draglines, rail sidings. Unit also spots RR cars. Gear shift is instantaneous . . . operator can always apply effective pulling, pushing power without loss of vital momentum.

Clears brush, strips overburden — Powerful Tournatractor clears brush, topples trees, and strips overburden from new mining area. Tractor's 4 big, high-flotation tires provide excellent traction. Blade is controlled by instant-acting electric motor.

Travels anywhere — 17-mph L-W tractor drives anywhere under its own power. When traveling between assignments, Tournatractor handles haul-road maintenance, improves drainage—keeps haulers moving at safer, more profitable speeds.

LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

C. E. Golson's subject: "Modern Classification Methods Applied to Fine Aggregates"

T. E. Gay, Jr. described the various aggregate-producing centers of California and their characteristics

A. B. Cummins described the uses and sources of diatomite

H. B. Goldman spoke on "Franciscan Chert in California Concrete Aggregate"

Sand recovery methods share AIME spotlight

THE ANNUAL MEETING of the American Institute of Mining, Metallurgical and Petroleum Engineers, held February 15-19 in San Francisco, Calif., once again demonstrated the AIME's skill in getting its message to its members and to the general public.

Newly elected president of the group is Howard C. Pyle, president of the Monterey Oil Co., Los Angeles, Calif. He succeeds Dr. Augustus B. Kinzel of New York City, vice president-research, Union Carbide Corp.

Papers of interest to rock producers included, in the Industrial Minerals Division, a presentation on "Franciscan Chert in California Concrete Aggregates" by Harold B. Goldman, California Div. of Mines. Mr. Goldman gave that aggregate a clean bill of health for use in concrete, except where it is present in excessive amounts and finely divided.

T. E. Gay, Jr., of the same division, described the various aggregate-producing centers of California and their characteristics.

"Modern Classification Methods Applied to Fine Aggregates" was the title of a paper presented by C. E. Golson of Western Machinery Co. This was a technical outline of the laws covering sand classifications, with slides showing several methods of recovering sand economically.

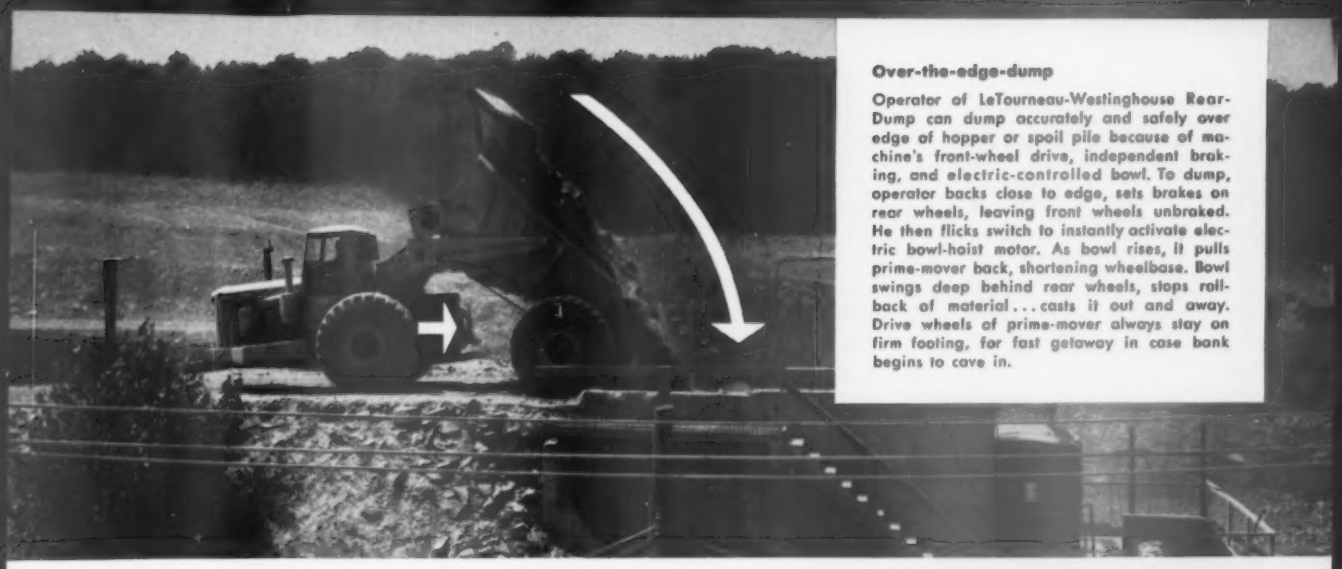
A paper prepared by Harold Potter and Duncan Williams of Monolith Portland Midwest Co., and delivered by G. M. Spece, outlined the use of carbon dioxide gas as a cement slurry thinner at the company's Laramie, Wyo., plant. The slurry evidently had a high pH in the 10-plus range. Kiln gases containing the CO_2 reduced this and, at the same time, acted as a thinner which, in turn, permitted a high solids content.

The same gas introduced into the west ball mills also increased grinding capacity, with over-all savings for both uses of about 4.4 cents per barrel.

"Flow of Limestone and Clay Slurries in Pipelines," by Ross W. Smith of the Colorado School of Mines Research Foundation, Inc., was a highly technical discussion developing a method with

Please turn to page 160

Enter 1049 on Reader Card



Over-the-edge-dump

Operator of LeTourneau-Westinghouse Rear-Dump can dump accurately and safely over edge of hopper or spoil pile because of machine's front-wheel drive, independent braking, and electric-controlled bowl. To dump, operator backs close to edge, sets brakes on rear wheels, leaving front wheels unbraked. He then flicks switch to instantly activate electric bowl-hoist motor. As bowl rises, it pulls prime-mover back, shortening wheelbase. Bowl swings deep behind rear wheels, stops rollback of material . . . casts it out and away. Drive wheels of prime-mover always stay on firm footing, for fast getaway in case bank begins to cave in.

COMPARE

- capabilities of your present haulers
- advantages of L-W Rear-Dumps

Hauls through soft, slippery areas

L-W Rear-Dumps haul safely through areas where other units bog down. Here's why: (1) Exclusive power-transfer differential, automatically transfers power from a slipping drive wheel to wheel on better footing. (2) 90° kingpin electric steer . . . independent of drive train . . . helps you "duck walk" out of trouble. Operator just turns prime-mover left, right, left, etc., to swing drive wheels ahead until they "walk" out and reach solid footing. (3) Rear-Dump can be "humped" forward, when bowl is empty, to get out of soft areas. Bowl is raised with front brakes locked and rear brakes released, shortening wheelbase . . . then bowl is lowered with rear brakes held and front released. Thus, without use of drive wheels, Rear-Dump "humps" forward.

No-drag "skid bottom" construction

There are no springs, hangers, tie-rods cluttering up the bottom of your L-W Rear-Dump. Simple "skid bottom" construction eliminates drag over dirt and rocks. Bowl is hitched to prime-mover through a horizontal yoke extending back from kingpin, and pivoted to body itself . . . just above and ahead of rear wheels. There is no frame or sub-frame to get out of alignment. Front-wheel drive and kingpin steer eliminate long drive shaft, hinged steering connections.

Big target for fast, easy loading

L-W Rear-Dumps' big, wide, unobstructed top makes an easy target for your shovel operators. Low, wide rear entry of this hauler lets dipper swing in smoothly, quickly . . . in one continuous arc . . . rather than the up-over-in, up-over-out motions needed with high-top trucks.

Big, single tires absorb shock, eliminate trouble of duals

4 giant, low-pressure tires dissipate vibrations and stress of high-speed hauls . . . absorb shock of heavy loads dropped into bowl. They flex and roll easily over rocks that might bruise or break smaller duals. There is no divided face where wedged-in rock fragments can wear and tear.

Write or phone your local L-W Distributor for more information on these big-production, low-cost Rear-Dumps. They are available in 11, 22, and 35-ton sizes.

R-1871-MQ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

AIME meeting *continued from page 158*

which friction losses due to slurry flow can be predicted for any size of pipeline.

A paper prepared by R. E. Boehler and N. C. Ludwig, Universal Atlas Cement Co., described a method of detecting and measuring the hot spots that sometimes develop at the hot end of a kiln. The technique makes possible early detection and correction before damage occurs.

At the session of special sands and abrasives, a paper by Hugh H. Bein, Del Monte Properties, discussed a colorometric method of estimating the feldspar content of a sand. Under the method described, certain dyes have a selective coloring action on feldspar grains, and by a microscopic count of colored grains vs. uncolored, a satisfactory estimate is obtained.

The paper presented by W. F. Dietrich, U. S. Bureau of Mines, was a statistical analysis of market and production trends for such fillers as asbestos, barite, clay (kaolin), fuller's earth, diatomite, limestone (whiting), lime, mica, silica flour, talc and soapstone and pyrophyllite.

The uses and sources of diatomite were described in a paper by Arthur B. Cummins, Johns-Manville Corp. He pointed out that it is a source of reactive silica and when properly used can be a valuable additive to concrete. Its uses as mild abrasive, polishing material, filter aid, mineral filler, insulating material and adsorbant were reviewed. Location of diatomaceous earth deposits, mining methods and beneficiation techniques were also described.

Man-made industrial diamonds are now being produced commercially by General Electric Co. GE's J. D. Kennedy told how pressures above 1 million psi. and temperatures above 6,000 deg. F. are used in diamond production. The largest diamonds produced by the process are in the 20-mesh range, and most are around 60-mesh. Due to its surface texture (rough compared with the smooth natural diamond), the man-made article can out-perform natural diamond abrasives. The speaker showed samples of the products and outlined their use for abrasives and cutting wheels.

A paper by W. W. Slade and R. W. Heindel gave a detailed description of the glass sand plant of Owens-Illinois Co. at Ione, Calif. Clay is removed from the sand-clay matrix and sent to the nearby Gladding-McBean plant. This clay is essentially kaolin. Liquid cyclones and froth flotation play an important part in beneficiation of the sand, and glass sand in the .022 of 1 percent Fe203 range is currently being shipped to West Coast points. Otto R. Brown, an American Cyanamid Co. metal-

Please turn to page 162

"Our equipment keeps on rolling—

We use Colmonoy No. 2, the Best Hard-Facing!"

You get top abrasion resistance and easy welding with low-cost Colmonoy No. 2 hard-facing electrodes. Use them on tractor treads, dipper teeth, ditcher teeth, truck beds, dragline buckets, any steel or manganese steel part.

Excellent arc stability and good flowing qualities make these low hydrogen AC-DC electrodes a cinch to apply. A Colmonoy No. 2 deposit has a Rockwell C hardness of 50 to 60.

Write today for more information about Colmonoy No. 2 and the rest of the Colmonoy family of hard-facing alloys.

HARD-FACING ALLOYS

WALL COLMONOY

DETROIT 3, MICHIGAN

BIRMINGHAM • BUFFALO • CHICAGO • HOUSTON • LOS ANGELES
LINDEN, N. J. • MORRISVILLE, PA. • PITTSBURGH • MONTREAL • GREAT BRITAIN

Available in 1/8, 5/32, 3/16, and 1/4-inch diameters, packed in 10-lb. sealed metal containers.

Enter 1041 on Reader Card

"MAGNECON" KILN LINERS EXCEL IN THE WORLD OF CEMENT MANUFACTURE

"MAGNECON" has gained international recognition as the leading hot zone refractory for rotary kilns. "MAGNECON" brick is a strong, dense basic refractory with high spalling resistance, low thermal conductivity and excellent resistance to chemical and abrasive attack. It is outstanding in its ability to acquire and hold a protective coating. It is made from Canadian magnesite with chrome ore under exacting chemical and physical controls.

"MAGNECON" BRICKS are now available with steel plates and cardboard spacers. Plates are keyed to the brick to prevent slippage.

CANADIAN REFRACTORIES LIMITED

CANADA CEMENT BUILDING, MONTREAL, CANADA

Enter 1081 on Reader Card

AIME meeting *continued from page 160*

lurgist, was given credit for laying the groundwork for the successful use of flotation.

The chemical raw materials session included a paper by Sylvain J. Pirson of the University of Texas, which outlined how phosphates can be leached in place by the use of SO_2 (sulfur dioxide) and water. The H_2SO_3 dissolves the phosphate minerals, and these are later precipitated out with an alkali, leaving fluorine in solution.

At a petroleum session, Gerald Johnson of the University of California Radiation Laboratory described "Mineral Resource Development by the Use of Nuclear Explosives" and outlined the atom's possible use to recover oil from shale.

Jerome W. Woomer of Pittsburgh, Pa., succeeds Stanley D. Michaelson of Salt Lake City, Utah, as president of the Society of Mining Engineers. Dr. John Chipman, professor of metallurgy at Massachusetts Institute of Technology, became president of the Metallurgical Society, succeeding Walter R. Hibbard, Jr., of Schenectady, N.Y. John S. Bell of Los Angeles, Calif., was elected president of the Society of Petroleum Engineers. He follows Basil P. Kantzer, Houston, Tex., in that office.

Dr. Joseph L. Gillson, Wilmington, Del., is president-elect of AIME. Formerly an AIME vice president, Dr. Gillson is chief geologist of E. I. du Pont de Nemours & Co.

Walter R. Hibbard, Jr., who is manager of alloy studies research for General Electric, was elected a vice president of AIME. Other new vice presidents are Thomas C. Frick, Lafayette, La.; Elmer A. Jones, Bonne Terre, Mo., and John C. Kinnear, Jr., McGill, Nev. END

Cement imports *continued from page 156*

gan, 116,200 bbl. Imports along the Gulf and West Coasts were very small.

Indications were that least year's level of imports would be substantially maintained, at least through the first part of 1959. However, new Canadian supplies may become more widely available to the West Coast and to central New York during 1959.

Imports of white cement entered at a fairly uniform rate except for the spring months when the level was seasonally low. The United States imported white cement from nine countries in 1958. Belgium led with 77,900 bbl.

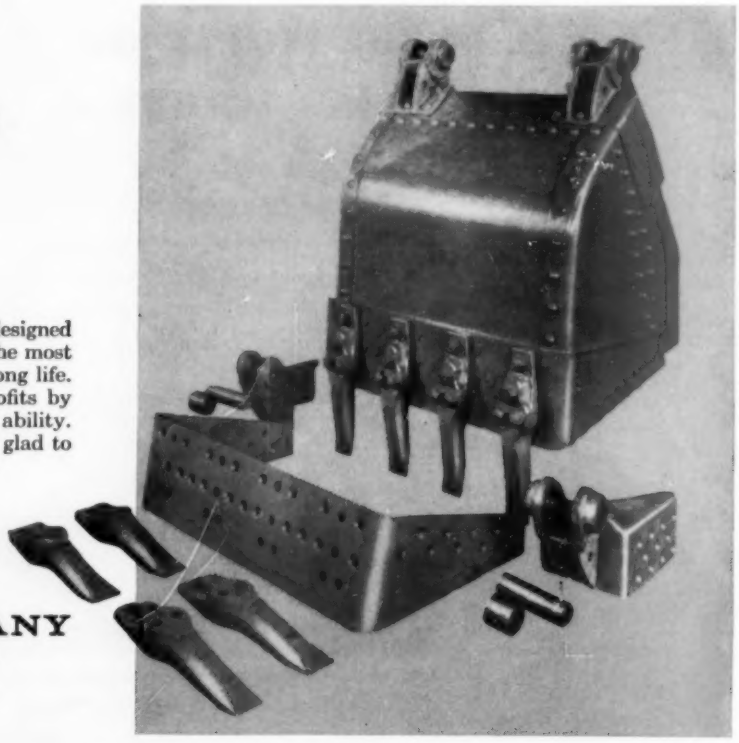
Please turn to page 164

Genuine Blaw-Knox repair parts are the best way to extend service life

Your Blaw-Knox Clamshell Bucket was designed and built as a complete unit to give you the most efficient operation, low maintenance and long life.

Mongrel repair parts cut into your profits by cutting operating efficiency and functional ability. Your Blaw-Knox bucket engineer will be glad to advise you on the proper replacement parts. Call him today.

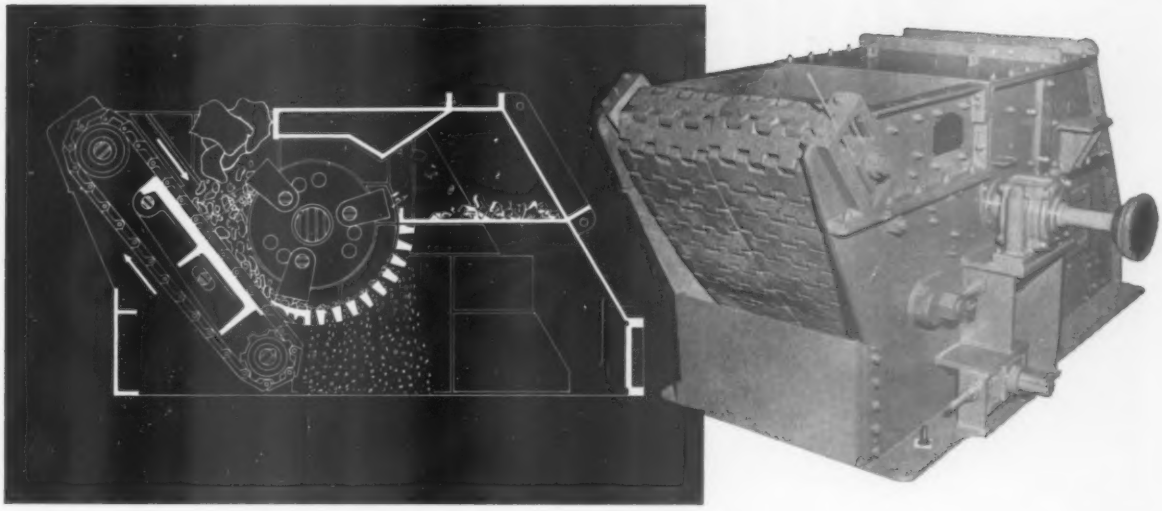
PARTS IDENTIFICATION SHEETS. Send us the size and serial number of your Blaw-Knox Bucket. We'll be happy to send you the correct parts identification sheet.



BLAW-KNOX COMPANY
Blaw-Knox Equipment Division
Pittsburgh 38, Pennsylvania

BLAW-KNOX

Enter 1042 on Reader Card



FOR CRUSHING WET AND STICKY MATERIALS

If you're bothered with plugging and time lost getting the mill clear, here's the crusher that'll do away with your troubles. It's the Pennsylvania Non-Clog Hammermill. When in operation the traveling breaker plate carries the feed into the path of the hammers at a fixed rate of speed, making it impossible for the sticky feed to build up on the breaker plate out of reach of the hammers. In extreme wet feed conditions, where frequent clean-outs in the rear of the crusher may be necessary, the Non-Clog can be equipped with a self cleaning device. For complete information on the Pennsylvania Non-Clog Hammermill, send for bulletin 1052. Pennsylvania Crusher Division, Bath Iron Works Corporation, West Chester, Pennsylvania.

Pennsylvania CRUSHERS

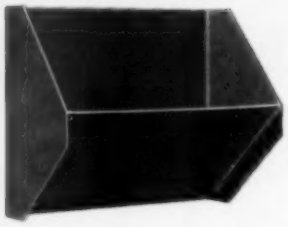
Enter 1080 on Reader Card

TOUGH
CONVEYING and ELEVATING CONDITIONS ?

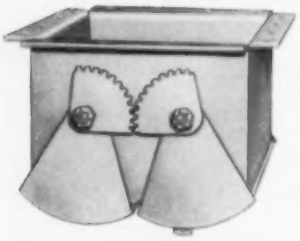
STANDARD METAL'S users lick TOUGH problems Every Day!

STANDARD METAL'S CONTINUOUS ELEVATOR BUCKET STYLE No. 2

This long-life bucket resists wear—delivers outstanding service and economy under severest conditions. This style is just one of the complete line of low-cost, rugged steel buckets manufactured by Standard Metal. Available in Salem, Style "A" and other continuous style buckets.



STANDARD METAL'S BIN GATES

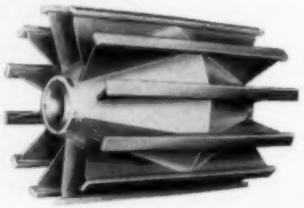


Here's the all-steel, gear-operated Duplex Bin Gate for faster, easier material handling at minimum cost. Now supplied standard with twin bracket at bottom of gate, drilled to accommodate bolt for fulcrum lever.

Single Bin Gates by Standard Metal also available.

STANDARD METAL'S WING-TYPE SELF-CLEANING PULLEY

Includes Taper-Lock Split Bushing to save time and trouble when mounting shaft. These pulleys are light in weight, yet their all-steel welded construction resists breaking, and delivers many years of trouble-free, low-cost service. Also available with solid hubs bored to specifications.



Contact us for full details and quotations on your particular needs in elevating and conveying equipment—for new installations or replacements. Ask for the catalog showing the complete Standard line.

The Standard Metal Mfg. Co. SINCE 1921

STANDARD METAL MFG. CO.
111 CENTER ST. MALINTA, OHIO

Enter 1043 on Reader Card

Cement imports *continued from page 162*

IMPORTS OF WHITE CEMENT, 1958
(U.S. bbl.)

Belgium	77,900
Denmark	46,300
United Kingdom	37,800
France	37,400
West Germany	25,800
Colombia	25,100
Japan	4,700
Mexico	3,300
Switzerland	(*)
Total	258,300

*less than 50 bbl.

As usual, Florida was the largest consumer of imported white cement, taking 172,900 bbl. Of the Florida imports, 70,500 bbl. came from Belgium and the remainder came in about equal proportions from the United Kingdom, France, West Germany and Colombia.

Other areas using sizable quantities of white cement from foreign sources were Chicago (30,200 bbl.), Puerto Rico (20,500 bbl.), Los Angeles (16,900 bbl.) and San Francisco (10,200 bbl.).

The total of 11,700 bbl. of hydraulic cement clinker imported in 1958 consisted of occasional small shipments, mainly from the United Kingdom, into Philadelphia (4,900 bbl.), New York City (4,400 bbl.) and a few other districts. At least a part of this clinker is believed to have been used for purposes other than hydraulic cement.

Present U. S. tariff on imported "Roman, portland and other hydraulic cement, except white nonstaining portland cement, and cement clinker" is 2¼ cents per 100 lb., or about 8½ cents per U. S. bbl. The original rate established in the Tariff Act of 1930 was 6 cents per 100 lb.; this rate was first reduced to 4½ cents as of May 1, 1935, following negotiations with Belgium. Most recent reduction came at the first meeting of GATT (General Agreement on Tariffs and Trade) and was the maximum cut allowed by law—50 percent; this became effective January 1, 1948.

The rate of duty on "white nonstaining portland cement" has had a similar history. The statutory rate of 8 cents per 100 lb. established by the Tariff Act of 1930 was cut to 6 cents in a trade agreement with France, effective June 15, 1936, and further reduced at the first GATT meeting to the present rate of 3 cents per 100 lb., effective January 1, 1948. All duties are levied on total weight, including weight of containers, if any.

Note that ad valorem equivalents of present specific rates are less than 3 percent for both white cement and "Roman, portland and other hydraulic cement and cement clinker." END

PRESTRESSED!

Quaker Thermoid Conveyor Belting keeps rolling with the punches

Before it ever comes to you, the heaviest tension you'll put on Thermoid-Quaker Conveyor Belting has already been built in—and then released *after* curing. So the rubber and fabric are really in *compression* when you put the belting to work—ready for the toughest pull without overstraining the yarn or the cover.

There's a Thermoid-Quaker belting designed with just the combination of properties you need for each conveying job. To get the right belting for *your* needs, talk with the Thermoid industrial distributor nearest you, or write to *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

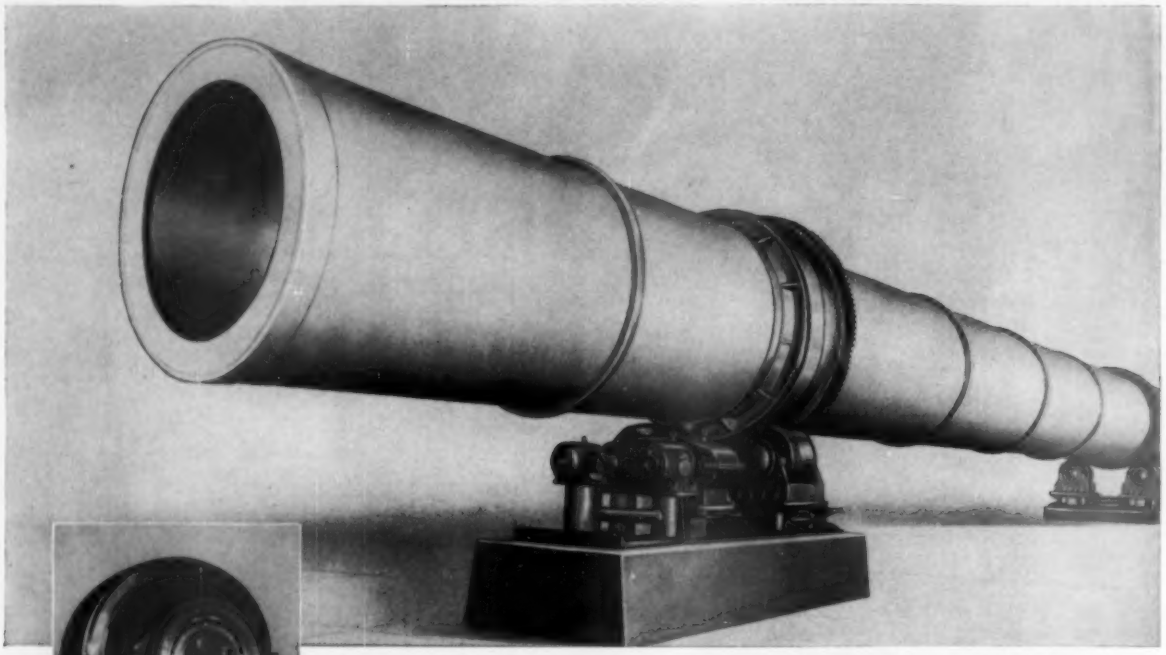
Notice how the special ply construction of Thermoid-Quaker "VICTOR" Belting provides greater flexibility at the edges—more shock-absorbing rubber where the worst beating occurs.

THERMOID DIVISION PORTER **H.K. PORTER COMPANY, INC.**

Divisions: Connors Steel, Delta-Star Electric, Disston, Forge and Fittings, Leschen Wire Rope, Mouldings, National Electric, Refractories, Riverside-Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.

Enter 1066 on Reader Card

NOW...A NEW HIGH IN ROTARY KILN EFFICIENCY



NEW Application of Anti-Friction Roller Bearings

Increases average bearing life over conventional bronze bearings by as much as 10 to 1.

BY VULCAN: SIMPLE . . . ECONOMICAL . . . RUGGED . . .

VULCAN WILL DESIGN AND MANUFACTURE THIS NEWEST OF KILNS FOR ANY APPLICATION: CEMENT (wet-dry) . . . COKE . . . LIME . . . CALCINED DOLOMITE . . . PIGMENTS . . . NODULIZING . . . AGGLOMERATING . . . SINTERING . . . PLUS USES IN MANY CHEMICAL AND METALLURGICAL PROCESSES

Now is the time for you to check into Vulcan's New Concept in Rotary Kilns. The following features illustrate how this highly efficient kiln departs from conventional kilns:

- **NEW SELF-ALIGNING TRUNNION ROLLERS** on which kiln rides eliminate the necessity for constantly readjusting the angle of rollers to compensate for slight shift in kiln's axis.
- **NEW CONSTANT THRUST LOAD CONTROL:** The thrust roller shaft is journaled in spherical roller bearings both above and below the line of thrust, thus avoiding a cantilever loading of the old design. These bearings are sealed in and lubricated by the central pressure lubricating system.
- **NEW PRESSURE LUBRICATING SYSTEM:** Continuous force feed lubricating system circulates cool, clean oil for all bearings, to insure top operating efficiency at all times.
- **NEW INTEGRATION OF GIRTH GEAR AND RIDING RING:** Concentricity between riding ring and girth gear is assured by the simple expedient of mounting each component on an integrally machined sub-assembly of the shell. This welded and machined sub-assembly, providing as it does for concentrated loading of the girth gear and riding ring, permits economical use of alloy steel forgings for both girth gear and riding ring.

Are you ready for a NEW kiln? Check with Vulcan today. Vulcan's NEW kiln in your operation will simplify your foundation plans . . . lower cost of erection . . . reduce power load . . . avoid frictional wear . . . decrease maintenance costs and drastically cut down-time. Write today; suggestions and preliminary drawings will be furnished (as far as possible) without obligation.

VULCAN IRON WORKS

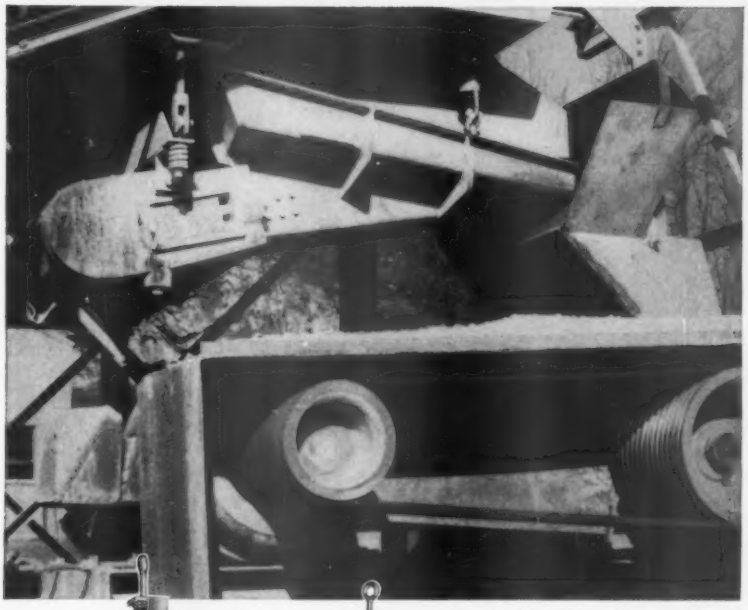
WILKES-BARRE PENNSYLVANIA

"THE OLDEST NAME IN ROTARY KILNS" ESTABLISHED 1849 — CABLE ADDRESS "VULWORKS"

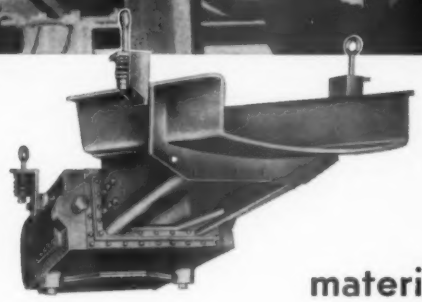
Enter 1104 on Reader Card

SYNTRON Vibra-Flow

VIBRATORY FEEDERS



Feeding stone from scalper to secondary crusher



Reduce bulk materials handling cost

SYNTRON Vibratory Feeders are designed for efficient, dependable, high capacity handling of sand, gravel, limestone or run of—quarry rock.

SYNTRON Feeders are durable, constructed to with stand heavy load impact and excessive wear by abrasion. Powered by an electromagnetic principle that eliminates motors, gears, bearings and belts and assures dependable operation with low maintenance.

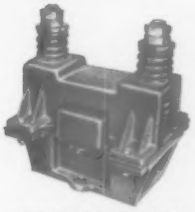
SYNTRON Feeders supply a smooth uniform, flow of materials to belt conveyors, crushers, screens, ball mills, and other process equipment. Rate of feed is instantly adjustable to meet production demands.

SYNTRON offers a wide range of Feeder sizes and models with capacities from 1 to 3000 tons per hour. All with variable control of feed rate.

Let SYNTRON cut your materials handling cost and increase production.

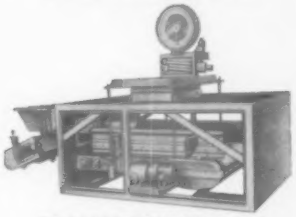
Write for complete catalog data—FREE

Other SYNTRON Equipment of proven dependable Quality



BIN VIBRATORS

VIBRATING SCREENS



GRAVIMETRIC FEEDERS

DRY FEEDER MACHINES

TEST SIEVE SHAKERS

SYNTRON COMPANY
450 Lexington Ave. Homer City, Penna.

Enter 1065 on Reader Card

Always DEPENDABLE For Moving Water and Tailings

NAYLOR Spiralweld pipe is light in weight, but has what it takes to handle piping jobs in mining operations.

It's easy to handle and install even over rough terrain. The spiral-lockseam provides the strength and safety required for rugged service—whether operations call for moving water and tailings, hydraulicking or handling air under pressure or ventilating.

You save time and work, too, when you use the one-piece NAYLOR Wedgelock coupling to make connections.

For full details, write for Bulletin No. 59.

NAYLOR PIPE *Company*

1237 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office
60 East 42nd Street, New York 17, N. Y.

Enter 1064 on Reader Card

TAPER-LOCK STEEL CONVEYOR PULLEYS

Maximum strength with minimum weight...
Unmatched holding power on the shaft...
New mounting simplicity.

The rims, discs and hubs of these modern conveyor pulleys are *steel*—and they are fused together into jointless drum construction for (1) maximum strength with minimum weight, (2) exclusion of dirt, water, steam, (3) terrific shock resistance.

With the patented Dodge Back-up Bar, welds of full rim thickness are achieved—and the ultimate in strength is assured by submerged arc process welds.

Taper-Lock Steel Conveyor Pulleys *hold*. Taper-Lock provides the equivalent of a shrunk-on fit—there is no "walking" on the shaft. Mounting and demounting are simple. Pulley and bushings mount as a unit. Alignment is easy. And the tapered bushing is wedged into place merely by turning the mounting screws. It is "unlocked" by using the mounting screws as jack screws.

Available in diameters from 6 inches to 8 feet—all face widths. Standard or special rubber lagging available. Ask your local Dodge Distributor—or write us for bulletin.

DODGE MANUFACTURING CORPORATION, 2600 Union, Mishawaka, Ind.

97 Taper-Lock Steel Conveyor Pulleys are used in this famous conveyor system engineered, manufactured and erected by Hewitt-Robins, Inc., at the Southern Pacific's causeway construction across the Great Salt Lake.

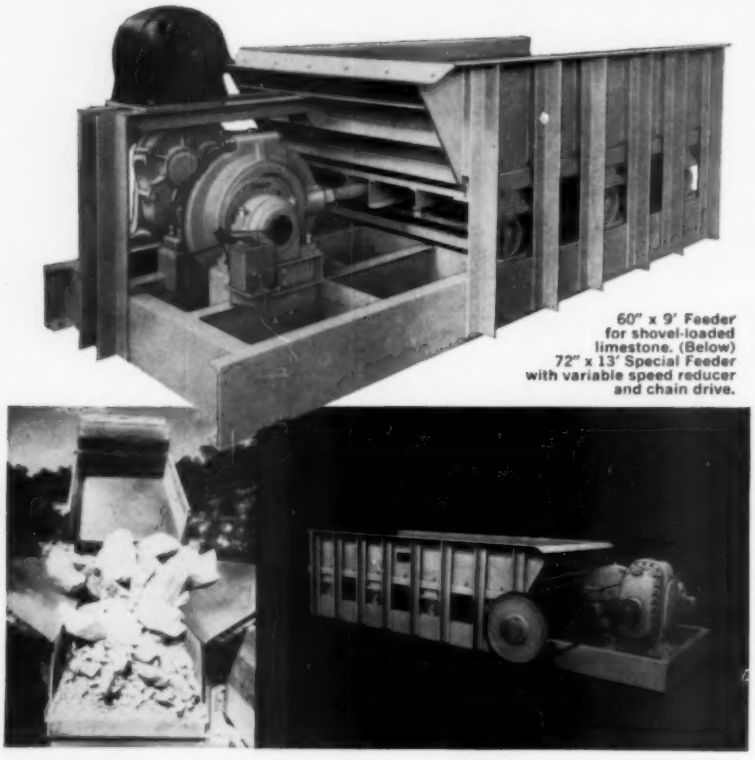
DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

Enter 1063 on Reader Card

LOW COST FEEDING

from sand to shovel-loaded rock



60" x 9' Feeder for shovel-loaded limestone. (Below) 72" x 13' Special Feeder with variable speed reducer and chain drive.

Built for lower operating costs and long service, these machines feed uniformly controlled quantities of materials. *The result:* elimination of choke-ups, overloads, wear and tear on the feeder as well as on other plant machinery. *Get the facts from Bulletin FRE-57.*

McLANAHAN SINCE 1835

RECIPROCATING-PLATE FEEDERS

McLANAHAN & STONE CORPORATION

252 Wall Street • Hollidaysburg, Pennsylvania

Enter 1024 on Reader Card

ROCKY'S NOTES

(Continued from page 16)

Science as applied to the manufacture and use of concrete has not yet reached the point of science applied to the practice of medicine, probably because the general public is not yet cognizant of the wealth of science that has yet to be applied by those responsible for construction. Advances in science relating to medicine and surgery are considered big news by the editors of newspapers and popular magazines, hence the public is better informed about them than about progress in inorganic structural and geochemistry. According to a Chicago newspaper report on an address by a "professor of legal medicine," it was stated that one of every 20 practicing physicians in this country is sued each year "for honest failures" if they are due to ignorance of what constitutes due care in the light of present-day practice. Consequently, this is now recognized as an occupational hazard for doctors. It is conceivable that the time may come when a concrete manufacturer, or a supplier of the ingredients of concrete, may be sued because he is not sufficiently aware of recent progress in knowledge relating to his product to protect him from lawsuits for "honest failures."

The purpose of the new division of ASTM referred to in our opening paragraph is described in somewhat abbreviated form, as follows: "The division will concern itself with the collection, establishment and publication of basic information essential to creating a better understanding of materials and their properties; recognition of the importance of placing more emphasis on fundamentals in view of the rapid growth of technology. The great need for broadening our basic knowledge of materials is strongly justified by providing a special place in the Society for concentrating in this area and for bringing together scientists and specialists from different fields." Needless to add, to anyone who has read our comments on the subject in previous issues, we are most heartily in favor of this project. We know from our own search of the literature that it is difficult and time-consuming for the ordinary layman, with only an engineering education or construction experience, to grasp the possible application of some of these newer sciences to cement and concrete, not to mention the difficulty in locating such literature. Usually, too, it is in technical terms with which the layman is unfamiliar, and hence hard to understand fully.

We know of only one book, which

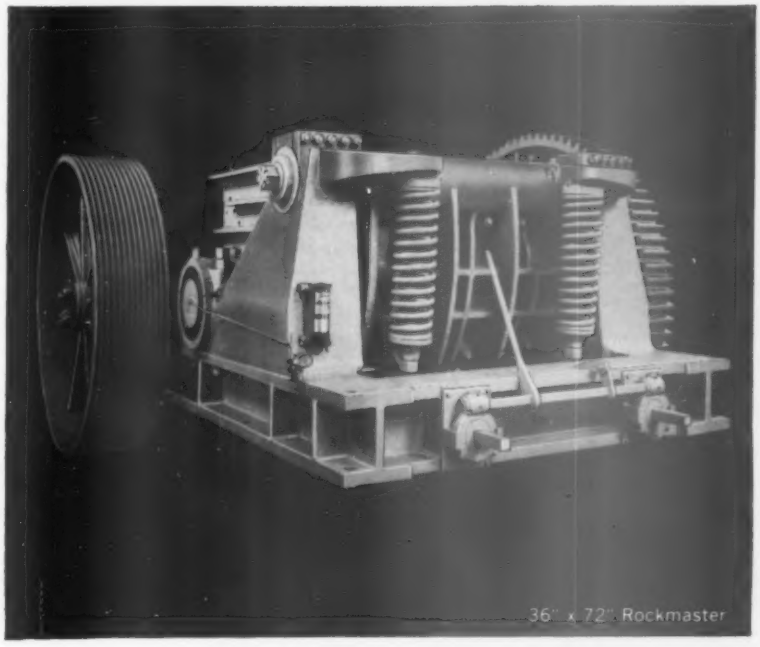
in and by itself is really helpful. We have reviewed this in an issue of a few years ago, and we have met with nothing comparable to it since. This is "The Chemical Composition and Properties of Engineering Materials," by Dr. P. C. Carman, of Pretoria, South Africa, published in 1949. Apparently, it is little known in this country, and in view of developemnts in these sciences in the last decade, it is probably a little out of date. However, it does attempt to do what the ASTM has in mind of marrying modern science to engineering practice. Incidentally, Dr. Carman is an authority on cement and concrete, although his book covers all other construction materials as well.

When we deal with a specimen of cement or concrete as if it were a constant unity (a homogeneous construction material) we overlook the well-known facts that no two portland cements have identical chemical or physical properties. That mortar we make with it varies with kind of mineral in the fine aggregate, its grading, its impurities, etc. That mortar varies with the water-cement ratio, the purity of the water, the temperature, the thoroughness of the mixing, the method of handling, curing, and the environment in which it is to harden and age. That concrete we make varies with all the factors already mentioned, and also with the mineral characteristics of the coarse aggregate, its grading and its chemical and physical composition. From experiments and experience with many kinds of concrete we have arrived at empirical data to use in the design of concrete mixtures and the design of concrete structures, but we are a long way from applying the fundamentals of the basic science of structural chemistry. As applied at present in geochemistry, or especially in silicate chemistry, structural chemistry should go a long way toward explaining some of the vagaries concerning concrete. END

New stone plant

A HALF-MILLION DOLLAR crushed stone plant has started operations near Martins Ferry, Ohio, near the Ohio River and Wheeling, W. Va. Materials Service Co., a newly formed firm, built the plant to serve the booming highway construction industry in the area with a plant closer than others to the jobs. The plant, on a 40-acre site, will employ up to 30 men in two shifts. Equipment includes primary and secondary jaw crushers, three cone crushers and two screening plants. END

world's MOST POWERFUL single-roll crushers



Widely used for primary and secondary crushing on the hardest and toughest kinds of shovel-loaded rock and ore, Rockmasters have high capacities and extraordinary ratios of reduction. Also they are the world's finest crushers for wet and sticky feed. Among outstanding design features: Automatic Steelstrut Toggle for release of tramp iron, and Quick-Adjustment for controlling size range.

Get all the facts from Bulletin RMTD-56.

McLANAHAN SINCE 1835

ROCKMASTERS

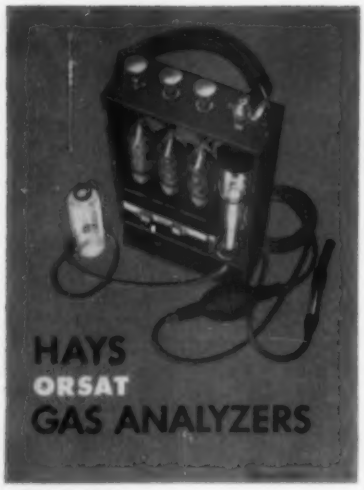
McLANAHAN & STONE CORPORATION

252 Wall Street • Hollidaysburg, Pennsylvania

Enter 1017 on Reader Card

NEW

LITERATURE



Gas analyzers

THE HAYS CORP. has released Publication 55-668-27 on its Orsat Gas Analyzers, termed by their maker "the standard of accuracy in industrial and scientific work." The units work by absorbing carbon dioxide, and measuring the sample volume before and after the CO_2 is removed. Used in cement plants, readings for CO_2 can be taken in 30 sec., and complete analysis for CO_2, O_2 and CO in 3 to 4 min.

Enter 500 on Reader Card

Rock equipment

THE JEFFREY MFG. CO. is distributing Catalog 952, describing its Floctrols (controlled flocculation), feeders, conveyors, settling tanks, scum removers, water and bar screens, grinders, collectors, bucket elevators and other equipment.

Enter 501 on Reader Card

Belt conveyors

CONTINENTAL GIN CO. has released a new catalog describing its belt conveyor products. They include heavy-duty and standard roller bearing and precision ball bearing idlers. The 88-page catalog, with code number ID-591, also contains a comprehensive section on engineering data to aid in selecting the equipment.

Enter 502 on Reader Card

Vibrating screens

OVERSTROM AND SONS, INC. has published a folder featuring a new method of estimating screen-area requirements. Using deck location, material shape and material weight factors and screen dimensions, the technique quickly gives needed answers to rock producers. A sample problem and solution are included.

Enter 503 on Reader Card

Electric control panels

PROTECTION CONTROLS, INC. has released Bulletin No. 159, illustrating its range of control panels for sequencing, supervising, indicating and controlling power in industrial processes. Easy servicing, single-unit control and compact design are advantages given for the packaged control centers.

Enter 504 on Reader Card

Blasting handbook

ATLAS POWDER CO. is distributing a "Handbook of Electric Blasting," a 60-page booklet which tells the whys and hows of effective electric blast detonation. For both beginner and expert, the handbook tells the advantages of electric blasting over old methods, the nature and construction of an electric blasting cap and the sources of power for electric blasting. Resistance of copper wire and caps and electric blasting circuits, the current given by standard blasting machines, methods of testing circuits and splicing wires are all given.

Enter 505 on Reader Card

Engineering developments

THE INDUSTRIES DIVISION, ALLIS-CHALMERS MFG. CO. has released the 1958 roundup booklet "Engineering in Action at Allis-Chalmers." The 32-page brochure describes the firm's metals and mining activities last year. For instance the firm's ACL grate-kiln system is mentioned, which boosts fuel efficiency and minimizes the dust problem. Other developments were air springs on vibrating screens and a new Lubritrol automatic lubrication system for grinding mills.

Enter 506 on Reader Card

Pumps

DORR-OLIVER INC. has issued a five-part catalog, "Dorr-Oliver Pumps for Hot or Cold Corrosive and Slurry Service." The firm's recently expanded line has three designs: alloy metal centrifugal, lined centrifugal and diaphragm slurry pumps.

Enter 507 on Reader Card

Lubricants

THE WHITMORE MFG. CO. has issued a folder on two new lubricating compounds said to have no melting or dropping point. Test data is given for the lubricants. They give constant protection to roller, ball and sleeve bearings, or sliding surfaces in "hot" bearing applications or in areas of high ambient heat, the maker reports.

Enter 508 on Reader Card

V-type engines

CATERPILLAR TRACTOR CO. has issued Booklet 20160, entitled "Cat 'V' Engines for Excavators." Since 1950, the company reports, its V-type engines have powered many diesel draglines and excavators in the 4 to 9-cu. yd. class. Ability to burn low-cost fuels (with their high Btu. values) and top accessibility for maintenance are two features of the engines.

Enter 509 on Reader Card

(Continued on page 175)

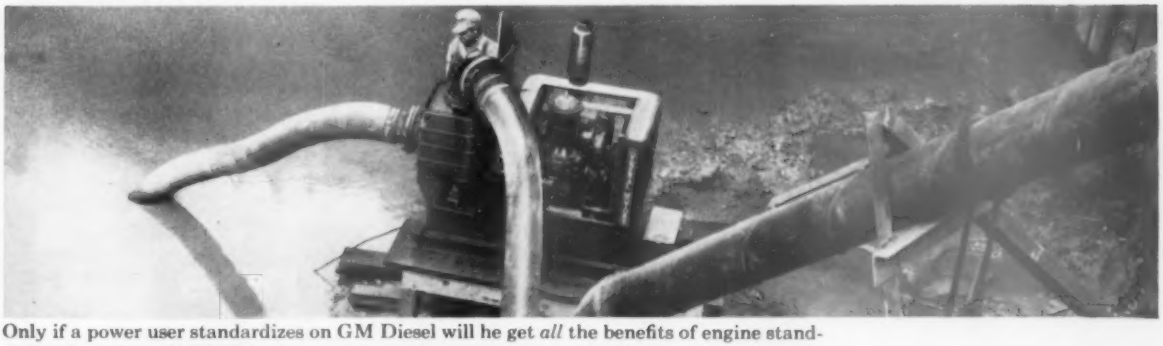
PROFIT NEWS FOR POWER USERS IN THE

all purpose power line

(20 TO 1650 H.P. IN ONLY 3 CYLINDER SIZES)

Now you can enjoy all the benefits of GM Diesel standardization in every type of equipment and still buy the best make of equipment on the market

GM Diesel engines are offered in more than 1800 applications of power equipment built by over 250 leading manufacturers—wider availability than any other Diesel



Only if a power user standardizes on GM Diesel will he get *all* the benefits of engine standardization—for *only* GM Diesel covers the entire power spectrum with only 3 cylinder sizes

Widest parts interchangeability pays off for fleet users in lower parts inventory requirements —for example, many parts for a 33 H.P. "Jimmy" Diesel fit a 1650 H.P. "Jimmy"

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

GM DIESEL

DETROIT DIESEL ENGINE DIVISION, GENERAL MOTORS, DETROIT 28, MICH.

PARTS AND SERVICE WORLDWIDE

Enter 1108 on Reader Card

The most wanted drill in the industry

THE 50-R

Drills blast holes up to 12¼-in. diameter... puts down almost 33 feet of pipe without stopping... makes short work of granite and quartz formations... *gives you more footage per dollar than any drill in its class.*

What's more, it's *ready* when you need it, day after day... even under most demanding conditions, owners find they can count on the 50-R to deliver high-production drilling without frequent time outs for repairs.

For complete information on the 50-R and other Bucyrus-Erie rotary blast hole drills, write Dept. 3BA, Bucyrus-Erie Company, Drill Division, Richmond, Indiana.

BUCYRUS ERIE®

Builds Better Equipment

NEW LITERATURE

(Continued from page 172)

Truck-mounted drill rig

GEORGE E. FAILING CO. has released Bulletin 58-3 on its new Blast Master drilling rig. Engineered to use the new down-the-hole tools for fast blast hole drilling, the unit also operates with rock or drag-type bits where conventional air drilling is desirable. It has a double-drum hoist, 7½-in. rotary table and a 2-speed hydraulic chain feed. With 31½-ft. mast and mounted on a Crane Carrier truck, the all-wheel-drive unit weighs 39,900 lb. Power is by a GM 4-71 diesel engine.

Enter 510 on Reader Card

Choosing engines

CATERPILLAR TRACTOR CO. is distributing Booklet 20186, entitled "How Caterpillar Dealer Engine Specialists Can Save You Money." Describing how the dealer can help in installation and application of diesel power, the booklet gives case histories showing how costs were cut and production boosted.

Enter 511 on Reader Card

Wear-in compound

THE ALPHA-MOLYKOTE CORP. has released Bulletin 120, a new piece describing its Molykote Wear-In Compound. Called the most effective lubricant yet developed for the break-in period of a new piece of equipment, the compound has shown ability to eliminate galling, seizing and excessive wear, the firm reports. It is also an effective lubricant for other troublesome friction applications in the average machine shop and plant.

Enter 512 on Reader Card

Motor grader

ALLIS-CHALMERS MANUFACTURING CO. has released Circular No. MS-1325 on its model 45 motor grader. The specification sheet shows the diesel-powered, 127-hp. grader in a cutaway drawing. Marginal notes describe features of the 23,800-lb. unit.

Enter 513 on Reader Card

Crawler tractors

ALLIS-CHALMERS MFG. CO. is distributing two new specification sheets on its HD-16 crawler tractors. The circulars feature cutaway views of the diesel tractors, available with either torque converter or constant mesh transmisison, with marginal notes on top design features.

Enter 514 on Reader Card

(Continued on page 178)

OWEN

the Greatest Name in Buckets All Over the World

Wherever you go, wherever you see excavating or handling of materials . . . there you will find one or more OWEN Clamshell Buckets on the job. Faith in their performance, confidence in their sturdy construction, and complete assurance in their ability to complete contracts satisfactorily and "on time" . . . these are the reasons that powerful, rugged OWEN Clamshell Buckets dot construction jobs all over the globe.

You'll get more from an OWEN in every way — Longer Life, Larger Loads, More Economical Operation. From drawing board to finished product, OWEN lives up to its great name in every way. Put the real worker on the end of the boom! — get a Great OWEN Clamshell Bucket without delay.

OWEN MATERIAL HANDLING BUCKETS

OWEN'S new center line reeving principle, now incorporated in a completely redesigned line of material handling buckets, is one factor that increases cable life of these buckets up to 75%. A full line now available from ¼ cu. yd. up to 10 cubic yards.

OWEN GRAPPLES

OWEN'S patented independent tine action 4-prong grapple has proven itself invaluable in land clearing operations. Its independent tine action guarantees positive contact and tremendous gripping power on each of the four tines, no matter how irregular the shape of the object may be.

Write us your exact requirements. Remember, OWEN Engineers are at your service. Send for Free Catalog today.

The OWEN BUCKET Co.

BREAKWATER AVENUE, CLEVELAND 2, OHIO

BRANCHES: New York • Philadelphia • Chicago Berkeley, Calif. • Fort Lauderdale, Fla.

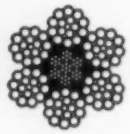
100

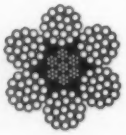
Enter 1030 on Reader Card

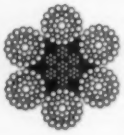
Enter 1031 on Reader Card

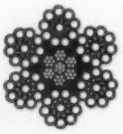
YOU CAN'T BARGAIN WITH SAFETY

WICKWIRE ROPES FOR THE QUARRYING INDUSTRY


6 x 21 Filler Wire, IWRC


6 x 25 Filler Wire, IWRC


6 x 41 Filler Wire, IWRC


6 x 19 Seale, IWRC

For detailed recommendations, write the nearest CF&I sales office, and ask for WR 737.

For safety and performance . . . order CF&I-WICKWIRE *"job-designed" wire ropes*

The Image of CF&I—a giant steelman—stands for the rigid quality-controls and testing procedures that are carried out in the production of Wickwire Rope. This Image also reflects CF&I's ability to design a specific product to meet a particular need.

These are the very reasons why CF&I-Wickwire Ropes are both *safe* —as only a *quality* wire rope can be—and *suitable*—because they are available in a *complete range* of wire grades, types, sizes and constructions, designed to meet each industry's requirements.

Avoid the losses—due to injuries and wrecked equipment—that can occur when a "bargain" rope fails. Buy a quality wire rope that's designed for the job it must do—a CF&I-Wickwire Rope.

WICKWIRE ROPE
THE COLORADO FUEL AND IRON CORPORATION

CF&I STEEL

In the West: **THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Denver El Paso • Farmington • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
In the East: **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York Philadelphia
CF&I OFFICE IN CANADA: Montreal • **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg
E794

Enter 1059 on Reader Card

WONDERWALL® did it— *cut breakage down to less than one bag per car*

Fact! That's the report coming to us from Mr. R. H. Pierce, Purchasing Agent of Cooperative Farm Chemicals Association, Lawrence, Kansas. Mr. Pierce states:

"Our tests with WONDERWALLS convinced us—showed less than one broken bag per freight car. Then, in our first shipment—14 cars of fertilizer in WONDERWALL bags, we found only 9 broken bags, 6 of which were caused by nails.

"We are using WONDERWALLS that are 20 pounds lighter in total paper basis weight than the ordinary kraft multiwalls we had been using, and we know we're getting a better bag.

"The single biggest advantage in using WONDERWALL bags is satisfied customers."

WONDERWALL is West Virginia's new, tougher multiwall that outperforms ordinary bags because it's made of Kraftsman Clupak* paper. This extraordinary paper stretches and withstands punishment that breaks ordinary kraft.

See how the WONDERWALL would reduce your breakage and, very possibly, also *cut actual bag expense.*

Let a West Virginia representative show you how you can save with WONDERWALL. Just write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N.Y.

Clupak, Inc. trademark for extensible paper manufactured under its authority.

WONDERWALL
Best bag of all

West Virginia Pulp and Paper

Enter 1060 on Reader Card

Are you getting maximum kiln production?

Are you getting optimum thermal efficiency?

If your cement manufacturing operation is typical of the industry, you're caught in today's profit squeeze brought on by rising fuel and labor costs. You're interested in even small increases in kiln output or small reductions in fuel consumption. You may be considering conversion to a more economical fuel or replacement of two short kilns with one long one.

However you are approaching the problem, one of your prime concerns is a burner that is engineered for maximum production at optimum thermal efficiency . . . tailored to your specific operating conditions. And that's where we fit in.

Coen Company has had 35 years' experience in the application of firing equipment to rotary kilns. Each Coen burner is individually engineered to the exact job requirements. On new installations, this custom approach assures economical obtainment of high tonnage of quality product. On conversion installations, Coen burners have increased production rates as much as 25% while maintaining or increasing thermal efficiency in terms of BTU/bbl. of output.

We think we have the answers to these pressing profit questions. May we work with you on your application?

If you are not sure of the answer to either of these questions . . .

. . . you should have our new brochure, Bulletin KB-59. It describes the Coen "custom approach" in designing burners for gas, oil or combination firing of kilns at heat release rates varying from 3,000,000 to 250,000,000 BTU/hr. It also covers fuel oil pump and heater sets and some exclusive Coen developments such as the unique Multi-Tip nozzle for narrow spray angle mechanical atomizing. You'll find it a valuable addition to your reference files . . . send for your copy today.

Combustion Engineers and Manufacturers

SINCE 1912 COEN

COEN COMPANY

40 Boardman Place • San Francisco 3

FYR-COMPAK® GAS AND OIL BURNERS · FYR-MONITOR® FLAME SAFEGUARD SYSTEMS
FUEL OIL PUMPING, HEATING & STRAINING SETS · AIR HEATERS · KILN BURNERS

Representatives in principal cities throughout the world

Enter 1035 on Reader Card

NEW LITERATURE

(Continued from page 175)

Crawler tractors

CATERPILLAR TRACTOR CO. is now issuing Booklet D904 on its D7, D6 and D4 tractors. Entitled "7 + 6 + 4 = 17," the piece tells 17 reasons why the firm's tractors are desirable. Job photos illustrate the points, which include light, fingertip steering, independent gasoline starting engine and tinker-free fuel system.

Enter 515 on Reader Card

Blasting aids

ATLAS POWDER CO. has made available to producers three new aids to efficient blasting: 1) A hip pocket blasting cost chart gives a way to make quick cost records while drilling, loading and shooting a blast. 2) The hip pocket loading chart, also of postcard size, makes possible an on-the-spot record of the blast loading pattern. 3) The blast summary card permits keeping a brief general record of each blast.

Enter 516 on Reader Card

Cone crushers

NORDBERG MFG. CO. has released Bulletin 236A, describing its 22 and 30-in. intermediate-size cone crushers. Rugged yet relatively lightweight, the two crushers have fine or coarse-type crushing cavities for second and third-stage reduction crushing. Features are described and illustrated.

Enter 517 on Reader Card

Control switches

ALLIS-CHALMERS MFG. CO. has released Bulletin 14B8112B on its Type 210 instrument and control switches. Used with circuit breakers, transformer tap changers, motor-operated rheostats, instruments and other equipment, the switches are available as either maintained or spring-return contact types. Rated at 20 amp. continuous capacity with 600 v. insulation, the switches are designed for panel mounting.

Enter 518 on Reader Card

Burner safeguard

MINNEAPOLIS-HONEYWELL REGULATOR CO. has released Specification S1015-5 on its new R4075A Protectoglo unit, called industry's first self-checking flame safeguard. Components are automatically checked once a second by the unit. Should a failure occur, the unit causes an immediate shutdown and sounds an alarm.

Enter 519 on Reader Card

(Continued on page 180)

Enter 1123 on Reader Card

USS
Rolled Steel Mill Linings
USS MILL LININGS are made from high carbon rolled steel plates and alloy rolled steel lift bars that have the toughness, strength and durability inherent in rolled steel products.

hot off the press...

FREE Booklet on USS Rolled Steel Mill Linings

Here's a brand new 20-page booklet that gives you specific information about USS Rolled Steel Mill Linings. Actual photographs taken right inside the grinding mills *show* you different types of installations. Cross-section drawings and photos along with engineering data, show the four basic linings and modifications that are available. If you are processing any of the following materials it will pay you to find out how these strong, tough high-carbon rolled steel plates and alloy rolled steel lift bars make possible greater efficiency and economy. Just send the coupon.

USS is a registered trademark

aluminum hydrate	emery	gravel	quartz
barite	feldspar	gypsum	rock salt
bauxite	ferrous compounds	iron ores	sand
calcium phosphate	firebrick	limestone	shale
cement—clinker	fire clay	manganese ore	silver ore
cement—raw materials	flint	marine shells	slag
chrome alloy	fluorspar	mica	spodumene
clay	galena	molybdenum ores	taconite
coal	gold ores	nickel ores	tin ore
cobalt ore	granite	phosphate rock	titanium ore
copper ore	graphite	potash	zinc ore

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Export Company

United States Steel

United States Steel
525 William Penn Place
Pittsburgh 30, Pa.

Gentlemen:
Please send me a copy of Rolled Steel Mill Linings.

Name.....

Company.....

Address.....

City.....Zone....State.....

NEW LITERATURE

(Continued from page 178)

Industrial locomotives

PLYMOUTH LOCOMOTIVE WORKS is distributing a brochure on its industrial and mining locomotives. Available in sizes ranging from 3 to 80 tons, and in both standard and narrow-gauge models, the units have either conventional or hydraulic torque-converter drive. Used in quarries and other rock products applications, the units feature Torqomotive drive, said to eliminate jolts and operator fatigue.

Enter 520 on Reader Card

Screen enclosures

ALLIS-CHALMERS MFG. CO. has made available Leaflet 26B9139, describing its dust-tight enclosures for floor-mounted single, double and triple-deck Ripl-Flo vibrating screens. The units are specially designed to solve plant air-pollution problems. The enclosures have stationary supporting frames and have easy accessibility for maintenance.

Enter 521 on Reader Card

Pump line

PEERLESS PUMP DIV., Food Machinery and Chemical Corp. is distributing Bulletin B-1300 on its Type A pumps. Capable of handling water and other non-abrasive liquids in quantities up to 70,000 gpm., the units permit pumping against heads up to 400 ft. and handling, with modification, of liquids with temperatures up to 300 deg. F. Easy maintenance and sturdy construction are other features given.

Enter 522 on Reader Card

Portable pump

STENBERG MFG. CORP. has issued a folder on its Model B-150/200L portable, submersible electric pump. The big unit, with a maximum capacity of 3,000 gpm., will pump to a maximum head of 220 ft. The pump requires no installation, suction hose or priming. Weighing 1,200 lb., it can be moved anywhere by truck and light crane. It can handle a high proportion of solids without clogging.

Enter 523 on Reader Card

Explosives

HERCULES POWDER CO. has issued the 1959 edition of its 82-page catalog on blasting agents, explosives and blasting supplies made by the firm. New blasting agents listed include Dynatex, a nitro carbo nitrate agent suited to open-pit mining, plus others protected from water, and desensitized agents which require a stronger primer for safety.

Enter 524 on Reader Card

Wire rope data

WIRE ROPE CORP. OF AMERICA is distributing two booklets on its Brown Strand wire rope, "Wire Rope Recommendation Handbook" and "Wire Rope Data and Tables." The Recommendation Handbook tells how to order wire rope and gives recommendations as to the best types to use in the mining and other industries. The booklet on Data and Tables gives specifications of each type, including weight per foot and breaking strength.

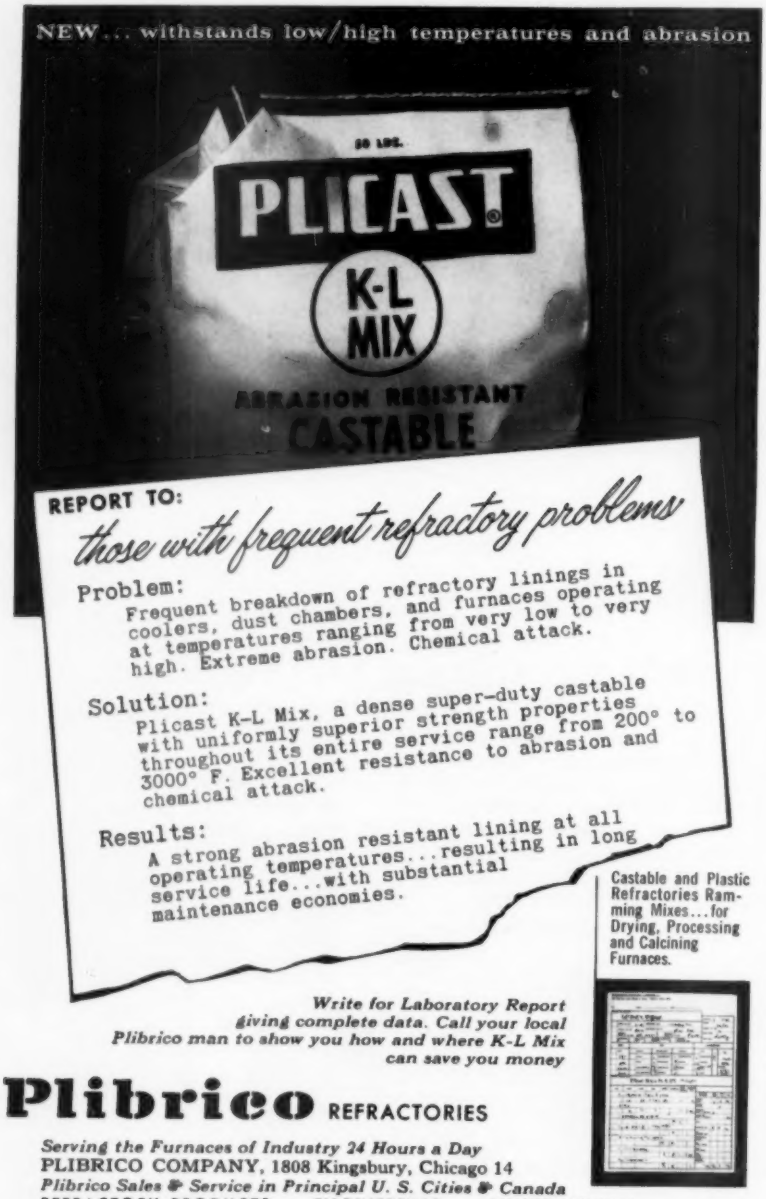
Enter 525 on Reader Card

Pneumatic conveyors

FULLER CO. has issued a 12-page booklet reprinting a speech, given at the 1958 Materials Handling Conference of the American Society of Mechanical Engineers, describing applications of its Airslide pump and Airslide horizontal fluidizing conveyor. Harry A. Markle, Jr., Fuller's chief engineer, gave the speech, in which he described how the Airslide pump is used for handling cement and other materials.

Enter 526 on Reader Card

END


NEW... withstands low/high temperatures and abrasion
80 LBS.
PLICAST
K-L MIX
ABRASION RESISTANT
CASTABLE
REPORT TO:
those with frequent refractory problems
Problem:
Frequent breakdown of refractory linings in coolers, dust chambers, and furnaces operating at temperatures ranging from very low to very high. Extreme abrasion. Chemical attack.
Solution:
Plicast K-L Mix, a dense super-duty castable with uniformly superior strength properties throughout its entire service range from 200° to 3000° F. Excellent resistance to abrasion and chemical attack.
Results:
A strong abrasion resistant lining at all operating temperatures...resulting in long service life...with substantial maintenance economies.
Castable and Plastic Refractories Ramming Mixes...for Drying, Processing and Calcining Furnaces.
Write for Laboratory Report giving complete data. Call your local Plibrico man to show you how and where K-L Mix can save you money
Plibrico REFRACTORIES
Serving the Furnaces of Industry 24 Hours a Day
PLIBRICO COMPANY, 1808 Kingsbury, Chicago 14
Plibrico Sales & Service in Principal U. S. Cities & Canada
REFRACTORY PRODUCTS · ENGINEERING · CONSTRUCTION
9335

Enter 1036 on Reader Card

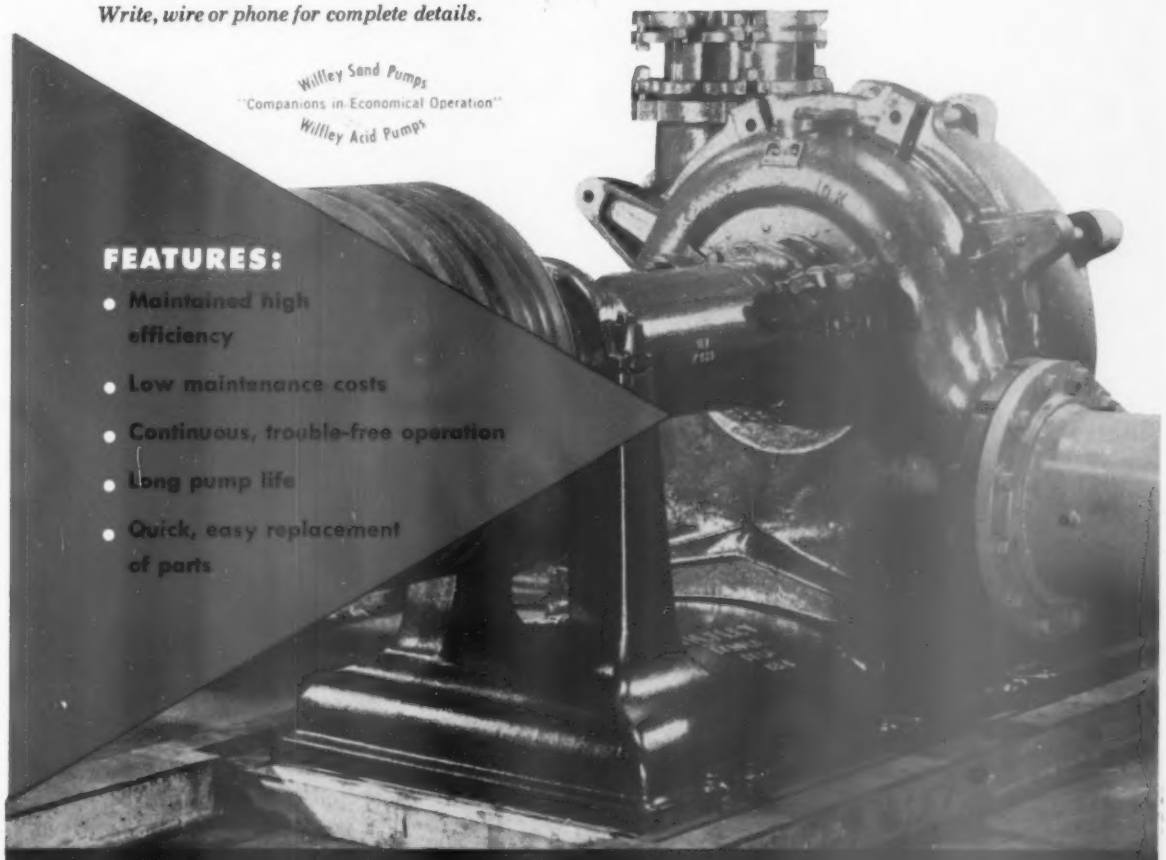
NEW! WILFLEY

10" Sand Pump for Higher Tonnages

Now, to meet the increasing demand for higher tonnages, Wilfley introduces a new 10" slurry pump! This addition to the famous Wilfley Model "K" pump line will be available with a variety of abrasion-resistant alloys and interchangeable, soft rubber-covered wear parts. The economical operating features of all Wilfley Sand Pumps are built into this new model. *Individual Engineering on Every Application*

Write, wire or phone for complete details.

Wilfley Sand Pumps
"Companions in Economical Operation"
Wilfley Acid Pumps



FEATURES:

- Maintained high efficiency
- Low maintenance costs
- Continuous, trouble-free operation
- Long pump life
- Quick, easy replacement of parts

When you buy quality, Wilfley quality, you buy superior performance.

A. R. WILFLEY and SONS, INC.

DENVER, COLORADO, U. S. A. • P. O. BOX 2330 • NEW YORK OFFICE: 122 EAST 42ND STREET, NEW YORK CITY 17

Enter 1109 on Reader Card

Don't look at the load on the belt... look at its edge

Notice the shiny band the edge of the belt has polished on the vertical training idler? Acme-Hamilton forestalls this critical wear condition by building extra-durable square edges on all its belts . . . a good point to file for future reference if edge wear is plaguing you.

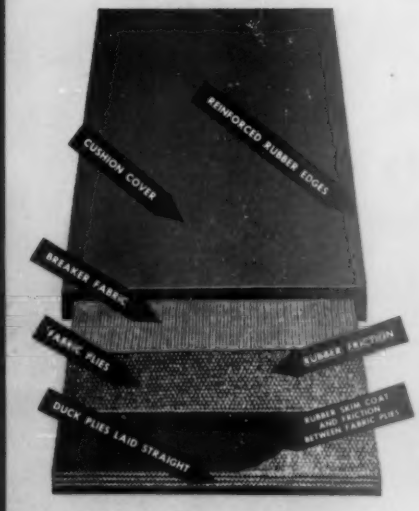
Reinforced Edges and covers defy abrasion, cutting, sharp impacts.

Breaker Fabric. Optional double cord fabric acts as second cushion, increases cover adhesion.

Fabric Plies. Impregnated with rubber to add strength.

Rubber Skim Coat. Provides a resilient bed between plies.

Write Acme-Hamilton, Dept. Q3.



Acme Hamilton

Serving Industry Since 1870

MANUFACTURING CORPORATION, TRENTON 3, N. J.

Divisions: Acme Rubber Mfg. Co. • Hamilton Rubber Mfg. Corp.

ATLANTA • CHICAGO • DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEW YORK • PITTSBURGH • SALT LAKE CITY • SAN FRANCISCO • SEATTLE

Enter 1110 on Reader Card

"READY-TO-USE" DYNATEX* COSTS LESS THAN PRILLS

Extensive tests conducted in open-pit mines and quarries have shown that Dynatex produces rock or ore at a lower cost than prilled ammonium nitrate-fuel oil mixtures.

These tests, conducted under actual working conditions, proved that Dynatex permitted an increase in the distance between drill holes as well as an increased burden. Economies were effected all along the line. The explosives loading factor was reduced, as were loading time, labor, drilling, and blasting costs.

If you have, or are now using, a prilled ammonium nitrate-fuel oil mixture, be sure to test Dynatex on your next blast. Our technical representatives will be glad to show you how Dynatex blasting agent can cut your costs, too. Phone or write our nearest branch office for complete information.

NO FUSS—NO MUSS. No mixing on the job—Dynatex is delivered ready for use.

QUICK LOADING. In cartridges, Dynatex is quickly loaded into bore holes. Where conditions permit, Dynatex may be poured into bore holes.

UNIFORM STRENGTH AND QUALITY. Dynatex is a blasting agent of uniform known strength and dependability.

CHOICE OF PACKING. Dynatex is available in multiwall paper, special burlap or Flexo-Bag® containers, or in fiber drums of standard diameters.

*Hercules trademark

Explosives Department
HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington, Delaware

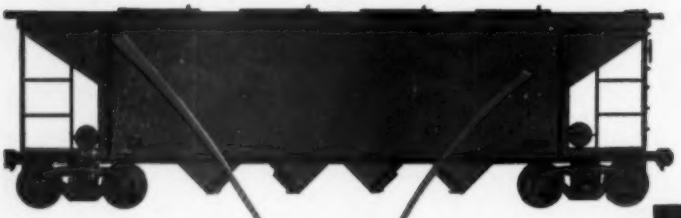
HERCULES

X859-1

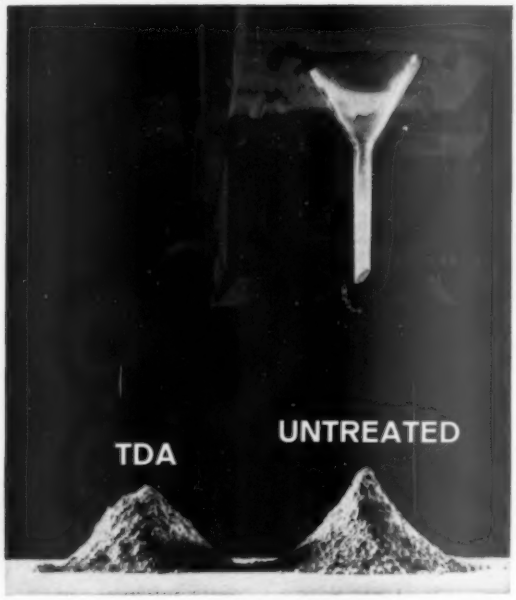
Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

Enter 1101 on Reader Card

How to save up to $84



unloading a car of cement



Laboratory test demonstrates dry-dispersion characteristics of TDA-treated cement. Here, cement samples poured from mechanically-vibrated funnels under closely controlled laboratory conditions are graded by their resulting slope, or "angle of repose." The lower slope of TDA-treated cement signifies greater dispersion, lower resistance to flow.

Two able-bodied men should be able to unload a hopper-car of cement in an hour or two. But if the load has become compacted or pack-set en route, the same job may take two days . . . 32 man hours, at $3 per hour!

There's a practical way to beat the problem. The answer is Dewey and Almy's TDA, a cement dispersant which makes cement flow easily and smoothly. In fact, tests show that TDA cement is 3 times easier to start flowing than untreated cement.

TDA is also a *grinding aid* which can increase mill output 10-50%, depending on conditions. When you consider this combination of benefits, doesn't it make sense to evaluate the use of TDA in *your* cement?

W.R. GRACE & CO.
DEWEY AND ALMY CHEMICAL DIVISION
Cambridge 40, Mass.

Dewey and Almy Chemical Division, W. R. Grace & Co.
621 Whittemore Avenue; Cambridge 40, Massachusetts
Attention: Rock Products Chemicals Department

☐ Please forward the new TDA "Pack-Set" Bulletin

☐ Please make arrangements for your engineer to assist in a full-scale test grind at our plant.

NAME .....

TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... STATE .....

Enter 1121 on Reade. Card

NEW U.S. PATENTS

OLIVER S. NORTH

Recently issued patents on nonmetallic minerals*

Cement process avoids formation of large clinker balls

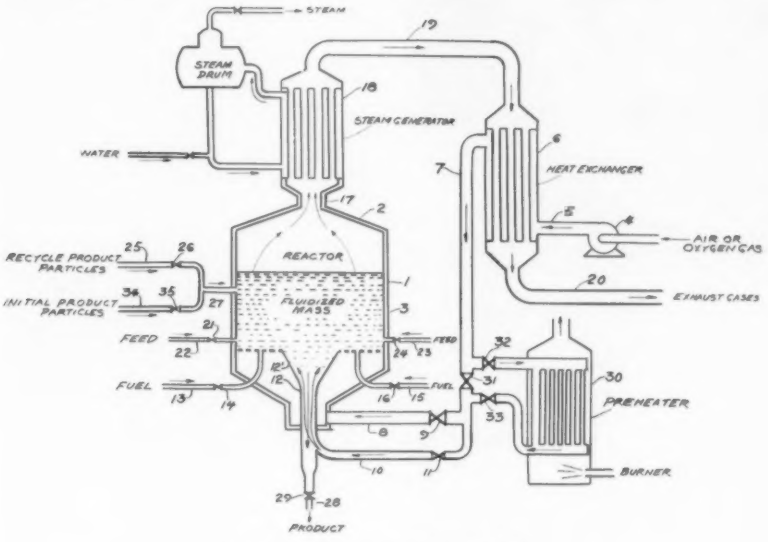


Diagram of Patent No. 2,874,950

The drawing, largely self-explanatory, shows the apparatus used in this process. A bed of coarse particles is established and maintained in reactor (12). Oxygen or other gas is admitted through lines (8 and 10), and gas, oil, or powdered coal through lines (13 and 15). Combustion is generated within the fluidized mass. Finely-divided raw material is fed through lines (22 and 23) and burned and lifted to the upper part of the turbulent bed, at which point it is mixed with relatively coarse recycled cement product particles entering via line (27). As the cement forming reactions progress, the fine material builds up layer after layer on the recycled coarse particles. However, there is insufficient molten phase present to cause agglomeration of the coarse particles into large clinker balls. Reactor gases are treated as illustrated. As particles become too heavy to be supported in the bed they fall through product tube (12) and out through line (28). A portion of the product is recycled via line (27) to furnish additional coarse particles in the reactor bed

Fluorspar

2,877,095—Method of producing a washable and easily filterable crystalline magnesium fluoride by the reaction of magnesium chloride and **fluorspar.** (to R. J. Anderson. Assigned to The Dow Chemical Co.)

Phosphate rock

2,875,032—Production of a phosphatic fertilizer product in which the content of assimilable phosphoric acid is increased. A proportioned mixture of **phosphate rock,** NaCl, and phosphoric acid is calcined at 600 to 800 deg. C. for 1 to 2 hours and then gradually heated to 1,000 to 1,100 deg. C. for 15 minutes to 1 hour. (to J. Bursaux, H. Ancelle, and H. de Saint Chamant. Assigned to Comptoir des Phosphates de l'Afrique de Nord.)

Cement

2,874,910—Design for a machine adapted for cutting up **portland cement** raw mix filter cake coming from filter presses. Cutter blades are fixed at the bottom of a rotary feeder drum. As the filter cake charge moves downwardly, the blades peel off slices of the material, and these slices fall to a band conveyor. (to L. H. Bishop. Assigned to The Associated Portland Cement Manufacturers Ltd.)

2,874,950—Process for making **portland cement** wherein the cement-forming reactions take place in a mass of fluidized solid particles under such conditions that large clinker balls are not formed. Alkali compounds do not appear in the product clinker and cement. (to R. Pyzel. Assigned to Pyzel-Fitzpatrick Inc.)

2,876,489—Mixing and sintering system for treating **portland cement** raw materials, **limestone, clay,** etc., in deep pallets in which the material is uniformly permeable for updraft or downdraft sintering operations. (to R. C. McDowell and T. E. Ban. Assigned to McDowell Co. Inc.)

2,876,841—To retard the set of an oil-well cement slurry, acid carboxymethyl gum arabic or like compound is incorporated with the dry **portland cement** or, alternatively, added to the cement-water slurry. (to M. A. Ryan. Assigned to Phillips Petroleum Co.)

Clay

2,872,419—In an improved process for continuous production of acid **activated clay,** a flowing mixture of clay and concentrated H_2SO_4 is heated in air to about 95 deg. C., and thereafter contacted with saturated steam, and the activated product recovered. The acid-clay reaction does not occur until steam is used, at which point activation takes place almost instantaneously (to J. R. Farnand and I. E. Puddington. Assigned to National Research Council). **END**

*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.

NEW MACHINERY

Dewatering, sizing device has automatic "bleeding"

A FREE-SETTLING sand classifying tank with automatic controls for sizing fines and removing large volumes of excess water has been announced. A newly designed automatic valve control allows constant bleeding of fine fractions. This exclusive design eliminates bridging or funneling.

The Sand-Sort is designed for use in plants where large quantities of water are used to handle sand. The sand-water slurry is introduced at the top end of the machine, and as it flows along the length of the rectangular V-bottom tank, the sand fractions settle out at their natural rate. The coarse sands settle out near the feed end and the finer sizes toward the discharge end. The slimes and water overflow into a launder. Settled sands are drawn off through the automatically actuated discharge valves, a valve for each size. *Western Machinery Co., 650 Fifth St., San Francisco 7, Calif.*

Enter 101 on Reader Card

Tractor-loader

A RUGGED NEW TRACTOR-loader, the 99, has a capacity of 2,000 lb. at half height and 1,500 at full height. It can be fitted to all utility models of Massey-Ferguson or Ferguson tractors, as well as those of Ford, International Harvester, Allis-Chalmers and Oliver.

The new unit is built 15 percent stronger than previous models. With larger frame and thicker lift arms, it's especially suitable for smaller producers and relatively light jobs. The lift arms and main frame have standard box-frame construction.

The unit has a 10-gpm. pump and an operating pressure of 2,150 psi. The lift arms have a breakaway power of 2,500 lb. The single dump cylinder is double-acting, with hydraulic pressure both ways. The bucket has a 10 ft. 2 in. clearance and will reach a maximum of 56 in. in front of the tractor. *Massey-Ferguson Industrial Div., 1009 S. West St., Wichita, Kan.*

Enter 100 on Reader Card

Crawler loader

WIDER USE of the Model 105 crawler tractor was assured recently when the maker announced new attachments and model numbers. The basic Model 105 remains, a unit which is a tractor-excavator, dozer and excavator-dozer unit depending on attachments.

But now the Model 125 front-end loader and fork lift is also available. Rather than being simply the basic unit with attachments, the new model

is specially engineered for its designated jobs. It has the exclusive torque converter "Unidrive" transmission team. The Model 125 is shown here, equipped as a dozer. *The Eimco Corp., Salt Lake City, Utah.*

Enter 102 on Reader Card

New 100-ton truck comes to U. S.

WHAT IS POSSIBLY THE WORLD'S largest off-highway truck with a capacity of 100 tons is soon to be introduced in this country. The French-made T-100 was designed for oil exploration work in the Sahara Desert, far from railroads and highways.

The 600-hp., 41-ft. long unit has 8-ft. diam. tires whose size was chosen by noting the pressure applied by a camel's feet on desert sand. This, plus its sturdy construction, means the unit can travel over practically any terrain. The truck is being marketed in this country because of the interest shown by several industries. *Automobiles M. Berliet, Lyon, France.*

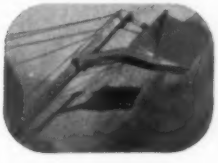
Enter 103 on Reader Card

(Continued on page 190)

new McCaffrey all cable shovel loader

loads, swings, and dumps without travel . . . requires no special hydraulic equipment

McCaffrey's versatile new loader can be adapted to fit any ¾ yard or similar crawler or pneumatic tire machine. It is designed and engineered for fast cycle time, maximum economy of motion and unusually low maintenance. Also available in comparably larger sizes for larger machines.



Write for complete details.

M. P. McCAFFREY, INC.

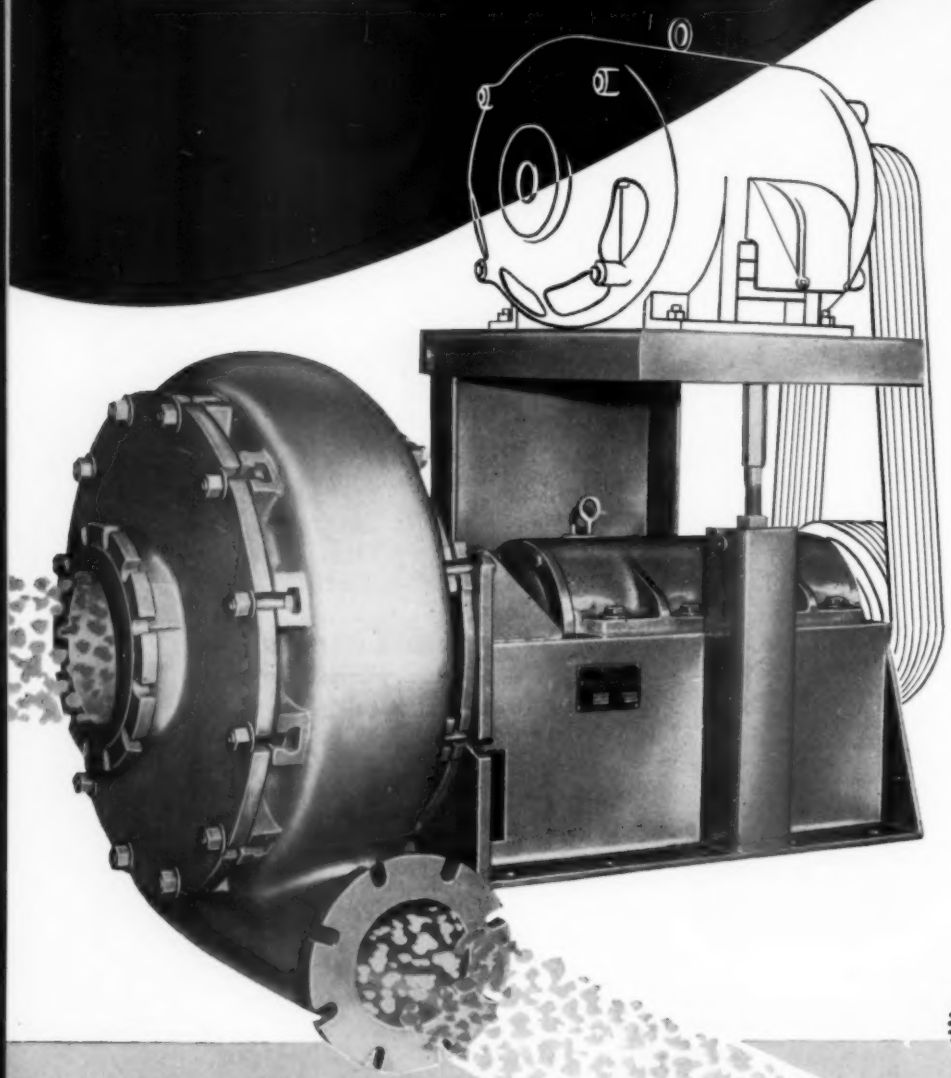
2121 E. 25th St., Los Angeles 58, Calif. • LUdlow 8-7181

Enter 1100 on Reader Card

Move a MOUNTAIN Through a Pipeline

Pulp, coal, chemicals, sand and gravel, all are moved quickly, efficiently and economically with

MORRIS Type CK Pumps



Hydraulic movement of materials can be simple, if you think in terms of a Morris Type CK Pump. A heavy-duty pump, with extra-wide clearances to handle larger random sizes, the Type CK is available in 4", 6", 8", 10", and 12" sizes. Engineered and constructed for long wear and resistance to abrasion and corrosion the Morris CK is available in semi-steel, ni-hard, cast steel or stainless alloys.

With the CK Pumps' low internal velocity, you get less turbulence, less abrasion, less wear and lower power costs. The Type CK features ease of maintenance, with extra clearances provided for easy replacement of packing . . . impeller readily accessible for inspection.

Morris maintains a nationwide network of centrifugal pump specialists, conveniently located to serve you. Their years of experience are invaluable when you plan a pump installation. For complete CK Specifications, and the name of your nearby Morris representative, write . . .

MORRIS MACHINE WORKS
BALDWINSVILLE, N. Y.

MORRIS
CENTRIFUGAL PUMPS

SALES OFFICES IN PRINCIPAL CITIES • EXPORT OFFICE:
50 CHURCH ST., NEW YORK 7, N. Y.

Screen COARSE SLAG with a 2-bearing screen ?

"Yes" says

KENNETH KAGARISE
General Superintendent
STANDARD SLAG COMPANY

"Frankly, we were skeptical of the ability of a 2-bearing screen to stand up to the man-sized job of screening coarse slag without flattening out. Some months after having 2 SECO TWIN BEARING Screens installed at our Weirton, W. Va. plant, we were so pleased with their operation, we had additional screens installed at our Sparrows Point, Md. plant. All are screening coarse slag and we have experienced very satisfactory results."

Mr. Operator: You owe it to yourself to find out how the stout-hearted performance of SECO TWIN BEARING Screens can help you to realize more profits through accurate, consistent screening year in and year out.

Made Only by

SCREEN EQUIPMENT CO., Inc.
Buffalo 25, N. Y.

SEND FOR BOOKLET TB-21 TODAY

Here's the whole story on SECO TWIN BEARING Screens. 8 pages of facts and illustrations that will show you why SECO TWIN BEARING Screens are your one best choice for accurate results, longer life and dependable performance.

SECO
TWIN BEARING
SCREENS

Enter 1127 on Reader Card

Enter 1126 on Reader Card

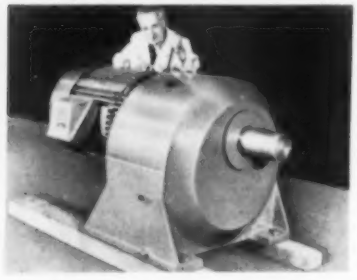
(Continued from page 186)

Gearmotors to 200 hp.

TWO BIG NEW gearmotors—the largest standard drive units ever produced—have been announced.

Known as GearMotoR drives, sizes J and H, they are rated up to 200 hp. and feature high efficiencies of 94 to 97 percent, depending upon the number of reductions. Double, triple and quadruple reductions are available in AGMA ratios ranging up to 440 : 1.

Final-stage helical gearing is carburized and hardened, and gear teeth are



precision ground. Large diameter shafting and oversize bearings have sufficient reserve capacity to handle the most severe overhung loads and shock conditions.

Standard NEMA D flanged motors and standard foot-mounted motors are available. Most standard ac. motors can be furnished from factory stock. Motors with special features—mechanical or electrical—can also be provided. *Philadelphia Gear Corp., 3620 G. Street, Philadelphia 34, Pa.*

Enter 104 on Reader Card

Bottom-dump hauler has higher capacity, less height

THE 495 PAYWAGON is an entirely new unit, designed as a high-capacity, low-silhouette, controlled-dumping wagon. Heaped capacity is 40.5 cu. yd. New exclusive power-opened clamshell doors afford positive, controlled dumping. Gravity closes the doors, eliminating complicated mechanism. The open rear frame lets loader spillage fall through, preventing the build-up of "free loading" material. Engine is a 375-hp. turbocharged diesel unit; features include positive valve rotation for long life and wet sleeves for top cooling. *International Harvester Co., 181 N. Michigan Ave., Chicago 1, Ill.*

Enter 106 on Reader Card

Scraper has higher speed, better accessibility

A NO. 619 WHEEL TRACTOR—No. 442 scraper combination has been announced. The scraper's Z-wheel tractor is designed to operate safely and effectively at 30.2 mph., a speed formerly possible only with 4-wheel hauling units. The new tractor has a 225-hp., turbocharged diesel engine, especially matched to the demands of the 18-cu. yd. (heaped) capacity scraper.

The high travel speed has been made possible by research into tractor-scraper balance, which made it possible to damp high-speed bounce.

Good accessibility of tractor components cuts service time. Examples: The transmission, differential, and cable control can be removed as a single unit by one man in approximately 30 min.; the cable control alone is removable in 10 min. The new hydraulic steering system on the tractor has a built-in safety device, providing more turning power when coming out of a turn than when going in. This helps overcome the inertial force of the loaded scraper, which tends to keep a two-wheel tractor from returning to center after a turn. *Caterpillar Tractor Co., Peoria, Ill.*

Enter 105 on Reader Card

Dust collector vibrator

THE BH-3-SP HI-IMPACT vibrator for electrostatic precipitators and dust collectors is a heavy-duty unit with a one-piece construction design. According to the manufacturer, there are no body assembly bolts to shear or stretch, and the piston is the only moving part, features said to practically eliminate some maintenance problems occurring with electrostatic precipitators and dust collectors. The Hi-Impact vibrators can be arranged with a timer and solenoid valve for completely automatic control. *National Air Vibrator Co., 2372 West 7 St., Cleveland 13, Ohio.*

Enter 107 on Reader Card

Heavy media ferrosilicon

ATOMIZED FERROSILICON 15 percent is now available to rock products producers for use in sink-float heavy media separation. The novel round form and smooth shining surface of the ferrosilicon grains offer greater resistance to corrosion especially since no contamination is produced between the media and the sand, gravel or rock in process.

The viscosity of the heavy media for the same weight of pulp is less than that of ground ferrosilicon, so adhesion loss is lower for the atomized ferrosilicon. The strength of the atomized power is equal to that of the ground material. *Westco Chemicals Inc., 6850 Tujunga Ave., No. Hollywood, Calif.*

Enter 108 on Reader Card

(Continued on page 193)

Ask your Allis-Chalmers dealer to show you **"And a Great Deal More"**

TL-14 TRACTOLOADER.

Buckets: 1 to 3-yd
Carry Capacity: 5,300 lb
Maximum Lifting Capacity: 11,000 lb
Breakout Force: 17,800 lb
Weight: 14,480 lb
Engine: Allis-Chalmers
81.5 hp — Diesel
86 hp — Gasoline

NEW! *medium-size Tractomotive Loader*

with all the working advantages of larger TRACTOLOADERS

- **Big 5,300-lb Carry Capacity**
- **A Family of Buckets to Choose From**

You can really "go to town" moving material with this completely new, medium-size TL-14 TRACTOLOADER.

You can carry as much as 5,300 lb every trip in a bucket that is just the right size for the material you are handling . . . get the highest possible production.

There's a whole family of buckets to choose from — 1 to 3-yd — for heaviest to lightest materials. Your Allis-Chalmers dealer has a list of materials and their weight per cu yd. He will help you select the most practical size bucket for your work.

In addition, you get all the operating advantages of the larger TL-20 and TL-16 TRACTOLOADERS: Such as a full power-shift transmission with *exclusive* ONE-LEVER SPEED AND DIRECTION CONTROL for faster cycles. Longer Reach . . . Greater Stability . . . Strong, Pin-Connected Planetary Axles . . . Safe Dump Cylinder Location . . . Fully Protected Hydraulic System . . . "Hi-Traction" Differentials!

Let your Allis-Chalmers dealer tell you all about this completely new TL-14. Let him show you how it can increase your production, cut your cost. You'll be glad you did.

ALL TRACTOMOTIVE EQUIPMENT IS SOLD AND SERVICED BY YOUR ALLIS-CHALMERS DEALER

TRACTO—
a sure sign
of modern design

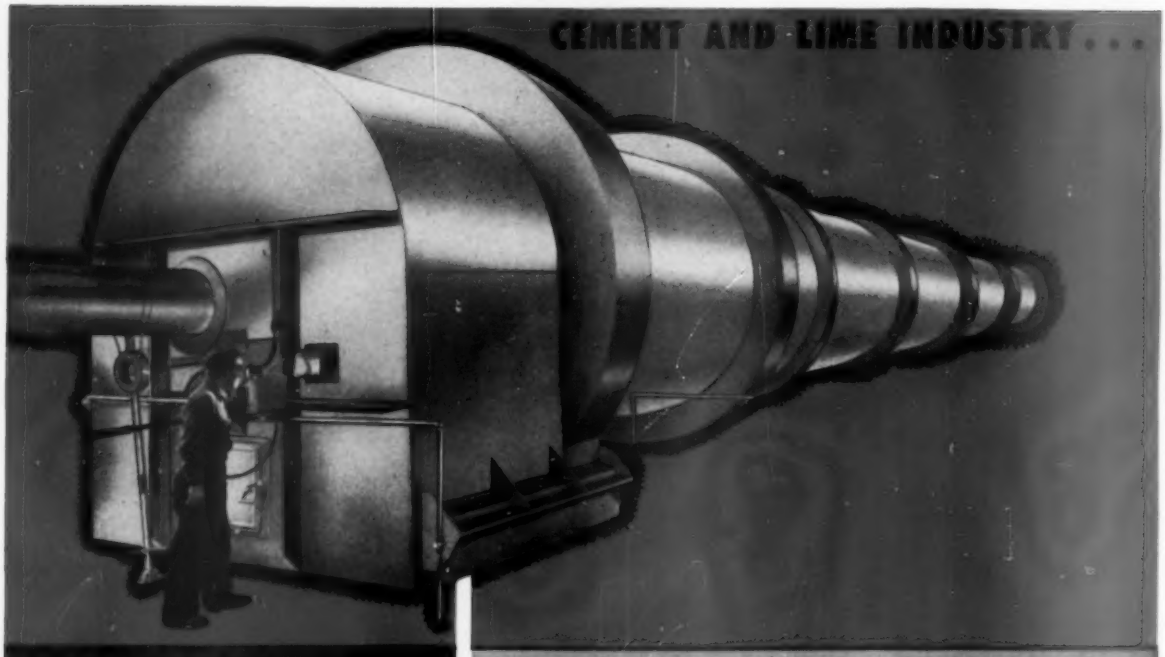
TRACTOLOADERS • TRACTOSHOVELS • TRACTORIPPERS • TRACTOHOES • TRACTOSIDEBOOMS

TRACTOMOTIVE
TRACTOMOTIVE CORPORATION • DEERFIELD, ILLINOIS

Enter 1111 on Reader Card

A. P. Green **REFRACTORY PRODUCTS**

A COMPLETE LINE OF REFRACTORY PRODUCTS FOR THE CEMENT AND LIME INDUSTRY . . .



80% ALUMINA
KRUZITE (70% Alumina)
MIZZOU (60% Alumina)
BIG CHIEF (50% Alumina)
KX-99
CLIPPER
A. P. GREEN HOT ZONE
EMPIRE

your assurance of MAXIMUM service at LOWEST cost . . . REGARDLESS of the operating conditions in your plant

In the cement and lime industry, operating conditions vary with each individual plant. Burning temperatures, chemical composition of the charge and many other factors influence the selection of the proper refractory material for a given job.

For half a century, the A. P. Green Fire Brick Company has been a leader in developing refractories to meet the exacting needs of the cement and lime industry. Your A. P. Green representative provides the engineering experience and knowledge, coupled with his complete line of A. P. Green Refractory Products, to give you a lining for maximum service at lowest cost.

Whatever your refractory problem or requirement, for specific recommendations without obligation to you, contact your local A. P. Green representative. You'll find him listed in the yellow pages of your telephone directory or write:

A. P. GREEN FIRE BRICK COMPANY

Mexico, Missouri, U. S. A.

PLANTS: Mexico, Mo. ● Woodbridge, N. J. ● Sulphur Springs, Texas ● Jackson, Oak Hill, South Webster, Ohio ● Philadelphia, Climax, Pa. ● Troy, Idaho ● Pueblo, Colo. ● Macon, Ga.

In Canada: A. P. GREEN FIRE BRICK COMPANY, LTD., Toronto 15, Ontario

A. P. Green REFRACTORY PRODUCTS

DISTRIBUTORS IN THE PRINCIPAL CITIES OF THE WORLD

Enter 1112 on Reader Card

NEW MACHINERY

(Continued from page 190)

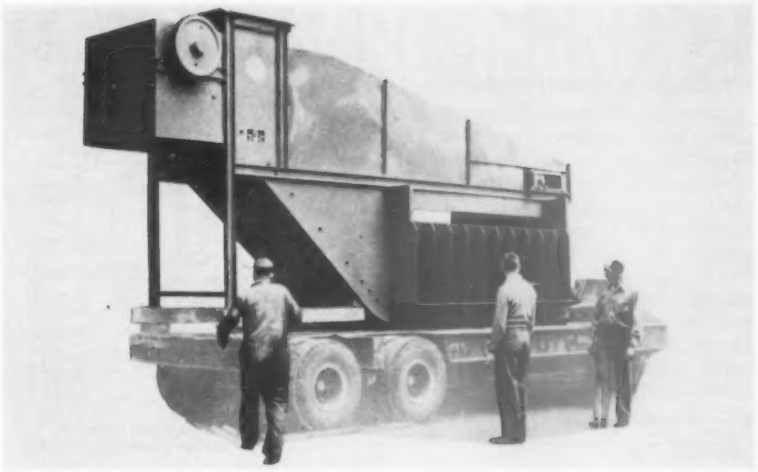
Take-up frame

A NEW TAKE-UP FRAME that permits the use of any pillow block is now on the market. One basic frame size accommodates all types—ball, roller or babbitted. Equally important, it is the only frame now available that can be top or side mounted. This is accomplished simply by loosening a locknut, permitting the flange connection to swing either way.

Known as the Versa Mount, the frame is equally suitable for installation on new or old equipment. It is highly compact and ruggedly constructed, including heavy formed welded steel frame and large zinc-plated adjusting screw. It can be disassembled easily without special tools.

A wide range of sizes and travel lengths from 2 to 36 in. are available from stock. These will accommodate any type or make of pillow block from ½ to 2 7/16 in. In addition to take-up, the Versa Mount can be used for motor bases, head shaft supports and similar applications. *Lovejoy Flexible Coupling Co., 4938 W. Lake St., Chicago 44, Ill.*

Enter 109 on Reader Card



Sand preparation unit cuts production costs

A SAND PREPARATION UNIT that promises fast preparation of specification sands at unusually low cost is being marketed. Due to "quiet action" and highly abrasion-resistant construction, wear and maintenance are cut about 50 percent, the maker reports.

The machine offers an exceptionally high sand raking capacity, correspondingly larger weirs with high overflow capacity and a large surface or "pool" which permits a quiet washing action without turbulence, it is reported. Washing currents are built in and remain sub-surface. The bottom is equipped with washing ports for the production of dewatered specification sand. *The Daniels Co., Indiana, Pa.*

Enter 110 on Reader Card

(Continued on page 194)

Designed for *efficiency*...
...Built for *service*

EHRSAM

AUTOMATIC POWER SHOVELS
with the
***BROOKS* AUTO-TRIP**

The Ehrsam Power Shovel saves time and money unloading bulk materials for cars and trucks. It has proven through the years of efficient service that it is a trouble-free, economical, and labor-saving machine. Hundreds of satisfied users attest to the dependability of Ehrsam Power Shovels. Write today for catalog 6A for complete details.

FOUR DIFFERENT MODELS
- 5-horsepower single self-contained Power Shovel
- 10-horsepower double self-contained Power Shovel
- Single shovel without drive
- Double shovel without drive

THE J. B. EHRSAM & SONS MFG. COMPANY
ENTERPRISE, KANSAS

West Coast Representative
Ehrsam Pacific, Inc.
San Francisco, California

Sales Offices
Kansas City, Kansas
Phoenix, Arizona

East Coast Representative
Wilks-Bermel Company
Lancaster, New York

Enter 1037 on Reader Card

NEW MACHINERY

(Continued from page 193)

Hydraulic locomotive crane

A NEW DIESEL hydraulic locomotive crane was announced recently. Because the new crane eliminates all open gearing and eliminates shafts, shaft bearings and clutches, it has eliminated all major sources of maintenance, the company claims.

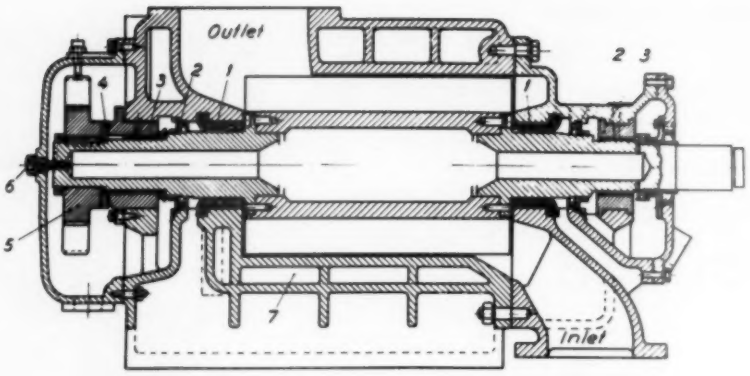
Also claimed for the unit is a much smoother, definitely quieter machine with 90 percent operating efficiency. The machine is available in nine sizes. *Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago 5, Ill.*

Enter 111 on Reader Card

Semi-automatic welder

A PORTABLE WELDER designed for either open arc hardsurfacing or submerged arc welding has been announced. Known as Handomatic, the unit features a universal semi-automatic wire feeder specifically designed for hardsurfacing, build up, and mild steel welding using tubular wires or solid wires, open arc or submerged arc processes. It may be readily connected to almost any welding machine, either ac. or dc. *The Hobart Brothers Co., Troy, Ohio.*

Enter 112 on Reader Card



1 Air seal
2 Oil seal
3 Journal bearing
4 Thrust bearing
5 Timing gears
6 Oil nozzle for rotor cooling
7 Cooling jacket

Rotary-screw compressor has space saving advantage

SPACE-SAVING, positive-displacement, rotary-screw air compressors deliver up to 19,250 cfm. The twin-rotor, two-stage compressors develop four complete compression cycles per revolution and operate at speeds of 3,600 rpm. They are available in 6,700, in 10,000 and 19,250-cfm. models.

In addition to design compactness, the "Twin-Air" machines are said to offer substantial maintenance savings because their rotors do not quite contact each other during operation.

In operation, the new compressor draws air into the front end of its twin-screw assembly. As the large threads or lobes of the parallel-mounted screws rotate into each other's grooves at high speed, air is spiraled ahead into increasingly small interlobe volumes until it is forced through the discharge port at pressures ranging up to 120 psi. *Atlas Copco, 610 Industrial Ave., Paramus, N.J.*

Enter 113 on Reader Card

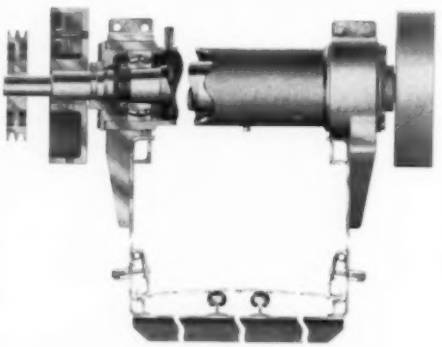
(Continued on page 199)

atomizing
SPRAY NOZZLES

HIGH EFFICIENCY spray nozzles that operate on hydraulic pressure alone and low water volume per hour. Provide even pattern distribution and excellent atomization. Made in stainless steel and brass for maximum service. Proved for performance in mill operation. Nozzles of all other types also supplied including pneumatic atomizing nozzles for every need.

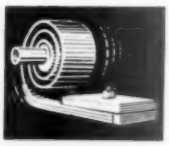
SPRAYING SYSTEMS CO.
3285 Randolph Street • Bellwood, Illinois
FOR COMPLETE INFORMATION
write for Catalog No. 24

Enter 1038 on Reader Card



Anatomy of Quality

Read the "inside story" of Overstrom's Vibrating Screens. Write Dept. RP-3 for complete details. Ask for new 8-page catalog.



OVERSTROM & SONS, INC.
2213 WEST MISSION ROAD • ALHAMBRA, CALIF.

Enter 1039 on Reader Card

WHAT MAKES YOU MORE MONEY?

1. Total Output... or Bucket Capacity?

ANSWER: *It's how fast you finish the job!* The M-F Work Bull 1001 with one-cubic yard payload is fast, maneuverable, and efficient. In competitive field demonstrations it has actually finished ahead of larger machines that cost thousands more. Let a Massey-Ferguson Industrial Dealer prove it .

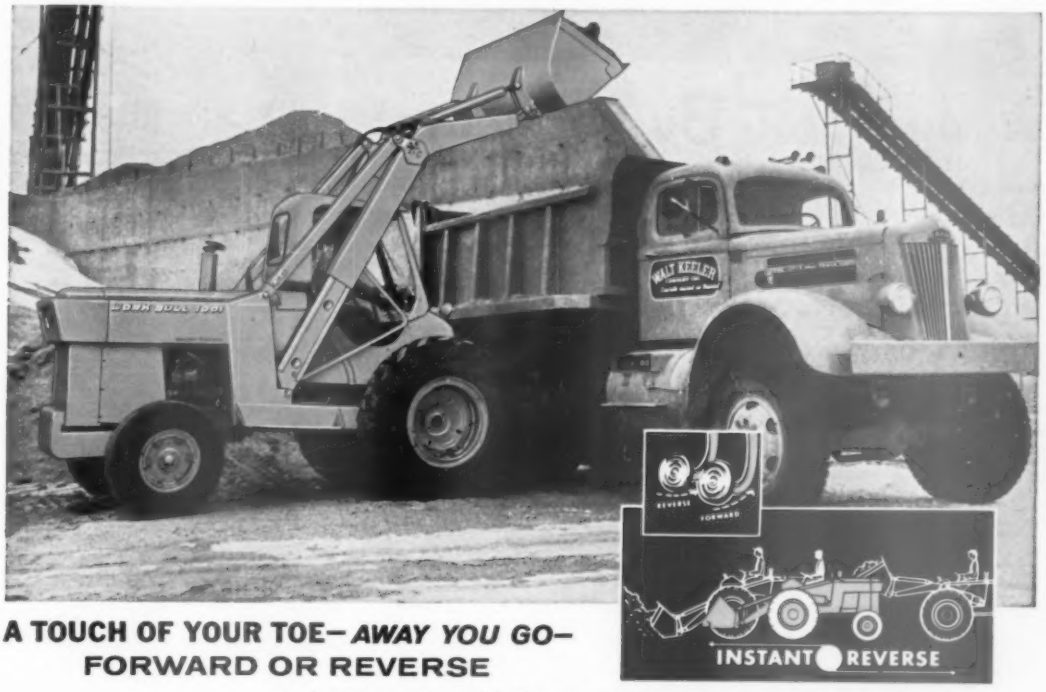
2. Performance... or Brute Strength?

ANSWER: *It's how well you do the job for the money!* The Work Bull 1001 makes maximum use of its power for lower operating costs. A unique direct-line thrust from low pivot points enables it to dig and transfer the weight of the payload to the drive wheels, adding traction and power.

3. Versatility... or Specialty?

ANSWER: Versatile equipment that makes a good profit on both large and small jobs. The Work Bull 1001 fills the gap between small utility loaders and expensive, specialized equipment. It's designed to be a master over a multitude of jobs and has many attachments.

MASSEY-FERGUSON'S WORK BULL 1001 MEETS THE *CHALLENGE!*



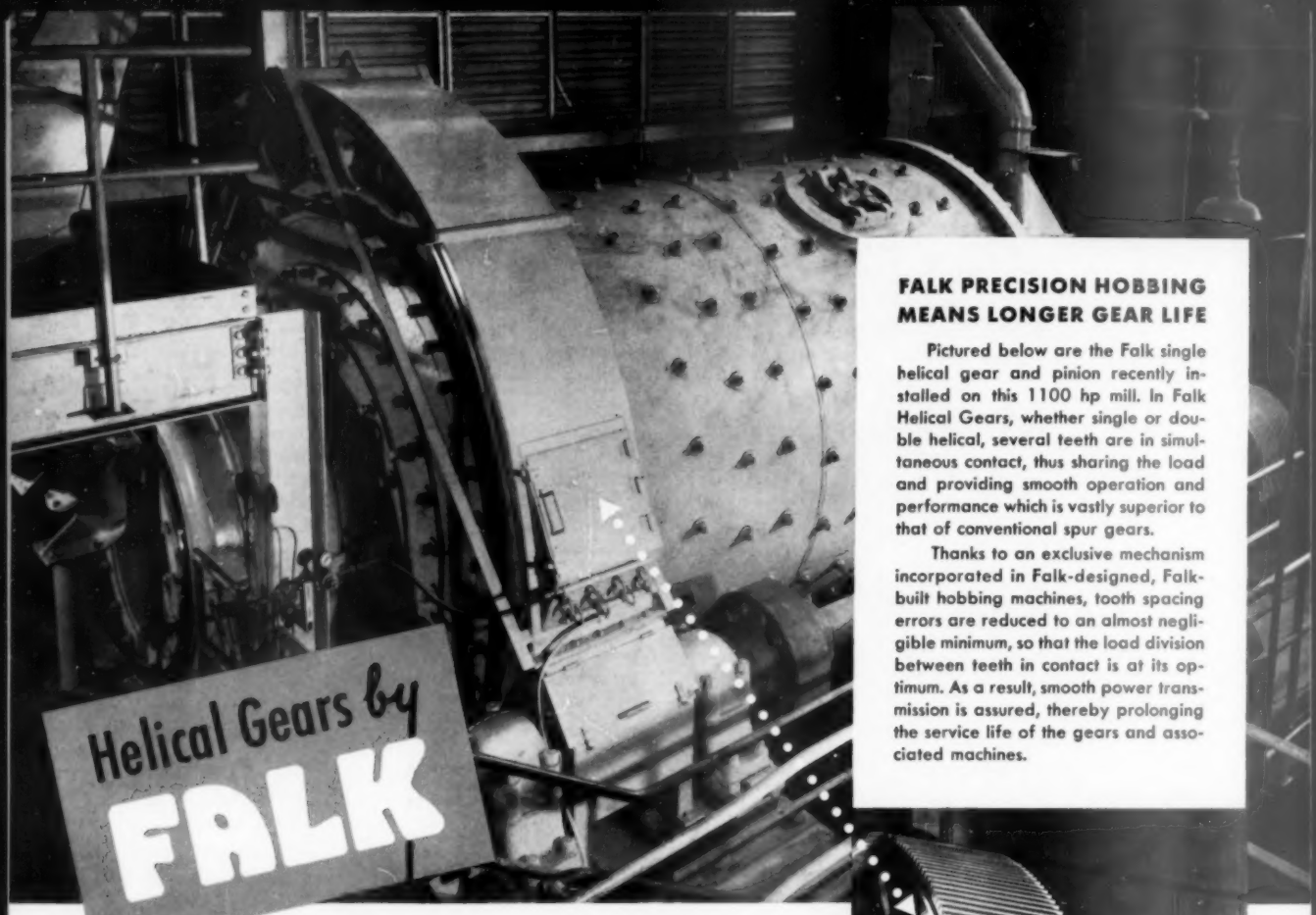
A TOUCH OF YOUR TOE— *AWAY YOU GO*— FORWARD OR REVERSE

Instant Reversing with Torque Converter on the Work Bull 1001 gives it unsurpassed maneuverability and speed on the job... No clutching... shifting... or levers to pull to change direction of travel!

Seeing is believing. Ask for an "on-the-job" demonstration today!

MASSEY-FERGUSON INDUSTRIAL DIVISION
1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

Enter 1074 on Reader Card



Helical Gears by FALK

...your Best Buy in gears!

In these times of industrial expansion and modernization, Falk Helical Gearing is more than ever the first choice of experienced, economy-minded users of gear-driven equipment.

This increasing preference is the result of proved performance. Falk Helical Gears and Pinions provide *better performance over a longer service life* because they are correctly engineered...their accurately generated teeth have extra depth and extra capacity...gear efficiency, as shown by actual test data, is 98+%...the highest you can buy!

Other superior features include: high reduction ratios which permit use of higher motor speeds for greater efficiency and reduced power costs; maximum resistance against abrasive wear; smooth, helical gear action. All these factors contribute to the long service life of trouble-free operation for which Falk gears are famed the world over.

When expanding or remodeling your production facilities, it pays to remember that the performance of your equipment will not be any better than the performance of the gears that drive it. So, if uninterrupted production is important to you, specify Falk Helical Gears. They're available in sizes up to 18 ft. in diameter...in capacities up to 2000 hp.

Consult any Falk representative—also, write for **Engineering Report 6170,** "Advantages of Helical Gearing."

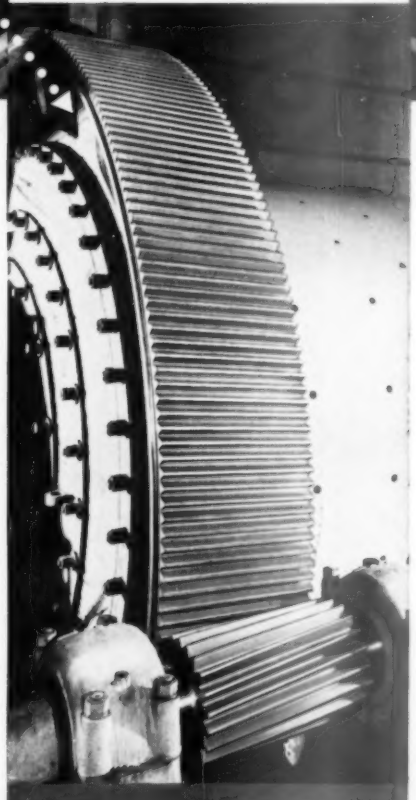
THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.

Representatives in Most Principal Cities

FALK PRECISION HOBBING MEANS LONGER GEAR LIFE

Pictured below are the Falk single helical gear and pinion recently installed on this 1100 hp mill. In Falk Helical Gears, whether single or double helical, several teeth are in simultaneous contact, thus sharing the load and providing smooth operation and performance which is vastly superior to that of conventional spur gears.

Thanks to an exclusive mechanism incorporated in Falk-designed, Falk-built hobbing machines, tooth spacing errors are reduced to an almost negligible minimum, so that the load division between teeth in contact is at its optimum. As a result, smooth power transmission is assured, thereby prolonging the service life of the gears and associated machines.



FALK

...a good name in industry

Any way you look at it...

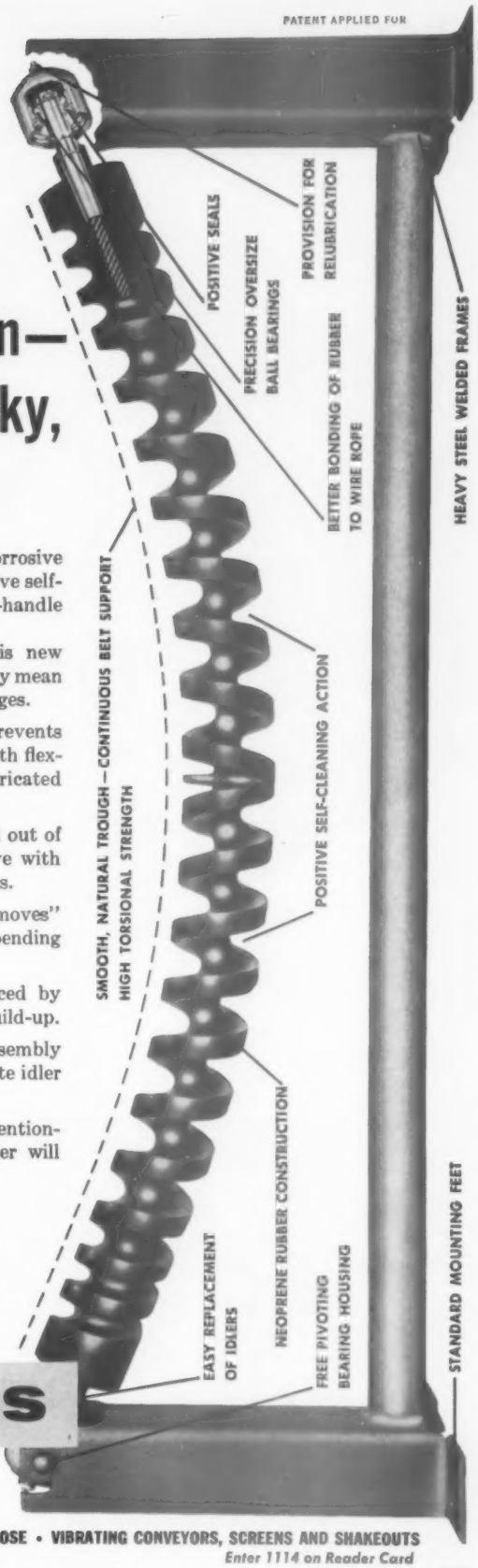
New Rubber Spiral Idler Defies Corrosion, Abrasion—Prevents Build-up of Sticky, Hard-to-Handle Materials

Here's the conveyor idler built to last longest in punishing corrosive atmosphere or extreme abrasive service! What's more, its exclusive self-cleaning rubber spiral prevents build-up of sticky, hard-to-handle materials!

The numerous design and construction advantages of this new Hewitt-Robins idler are shown in the illustration. Here's what they mean to you in terms of cost-cutting, time-saving, operating advantages.

- **LONG LIFE.** Neoprene spiral, completely covering wire rope, prevents attack in corrosive atmosphere. Uninterrupted spiral gives smooth flexing, maximum strength. Precision sealed bearings can be relubricated for still longer life.
- **SELF CLEANING.** As the spiral turns, it "works" any material out of the grooves as they change shape. This action is most effective with sticky materials which tend to build up on common types of idlers.
- **CONTINUOUS BELT SUPPORT.** The new rubber spiral design "moves" along the entire width of the belt; therefore, pinching and sharp bending of the belt are eliminated.
- **SELF TRAINING.** Belt training problems are greatly reduced by readily conforming rubber spiral, and by elimination of material build-up.
- **EASY REPLACEMENT.** The spiral, wire rope, and bearing assembly simply lifts out of its brackets—no tools are needed. The complete idler fits standard conveyor stringers.
- **TRUE OPERATING ECONOMY.** Under conditions where conventional idlers fail prematurely, the Hewitt-Robins rubber spiral idler will pay for itself many times over.

Deliveries of this revolutionary new idler are now being made in 18, 24, 30, and 36 inch belt sizes. For further information check your H-R distributor, or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 5-19.



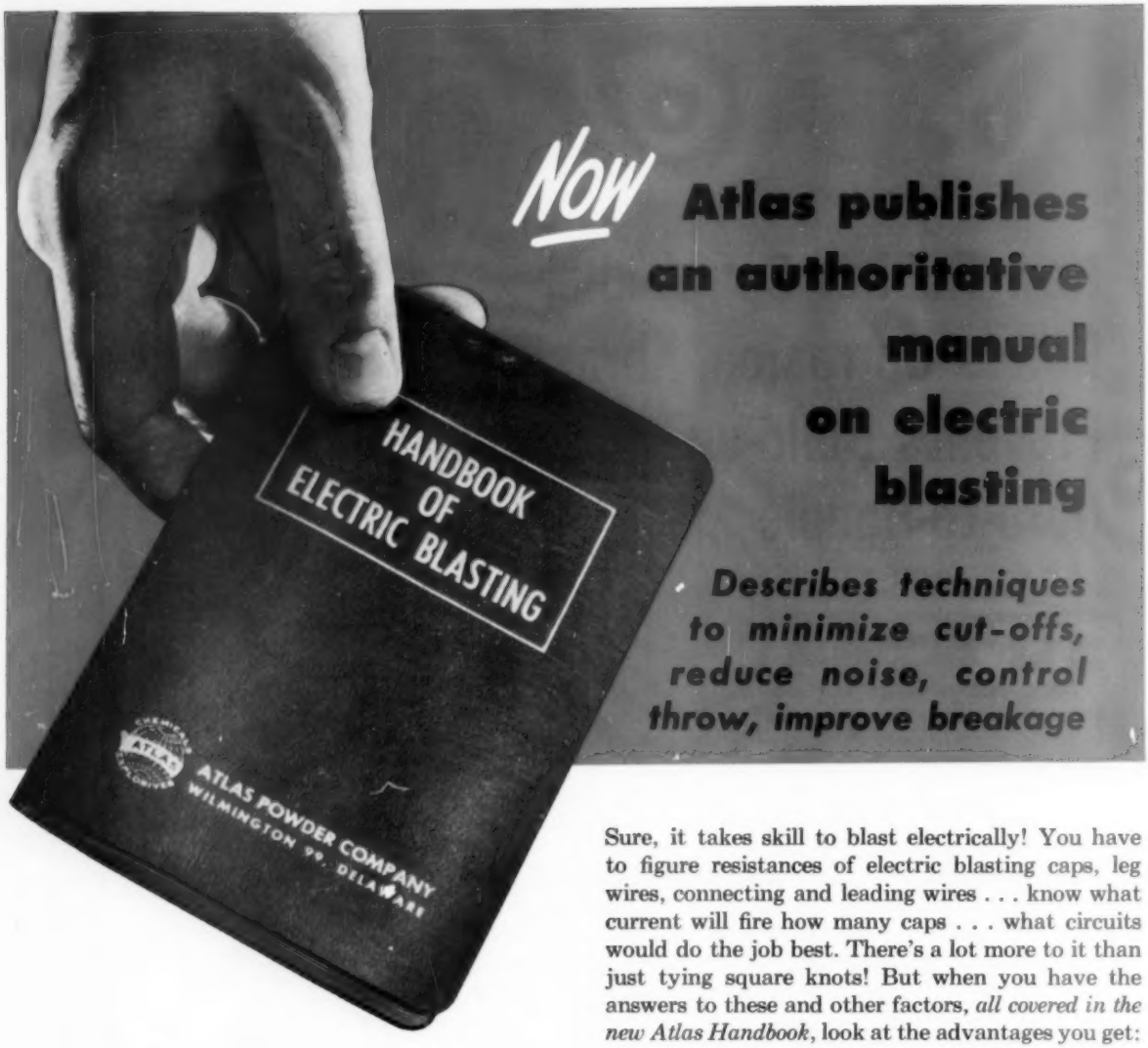
HEWITT-ROBINS

THE NAME THAT MEANS EVERYTHING
IN BULK MATERIALS HANDLING SYSTEMS . . .

CONVEYOR BELTING AND IDLERS • POWER TRANSMISSION DRIVES • INDUSTRIAL HOSE • VIBRATING CONVEYORS, SCREENS AND SHAKEOUTS

Enter 1114 on Reader Card

Enter 1115 on Reader Card



Now Atlas publishes an authoritative manual on electric blasting

Describes techniques to minimize cut-offs, reduce noise, control throw, improve breakage

Sure, it takes skill to blast electrically! You have to figure resistances of electric blasting caps, leg wires, connecting and leading wires . . . know what current will fire how many caps . . . what circuits would do the job best. There's a lot more to it than just tying square knots! But when you have the answers to these and other factors, *all covered in the new Atlas Handbook*, look at the advantages you get:

- **Initiation at the point that puts the full explosive force to work**
- **Dependable split-second timing in each charge before the rock begins to move**
- **Better control of throw • Minimum noise and vibration**

The pay-off is in more complete breakage, quicker, safer digging, reduced crushing and maintenance costs, better public relations. Write now for your copy of the new Atlas "*Handbook of Electric Blasting*." Discuss the methods it describes with your Atlas representative. He has a whole kit full of ways to help lower your blasting costs and get better breakage.

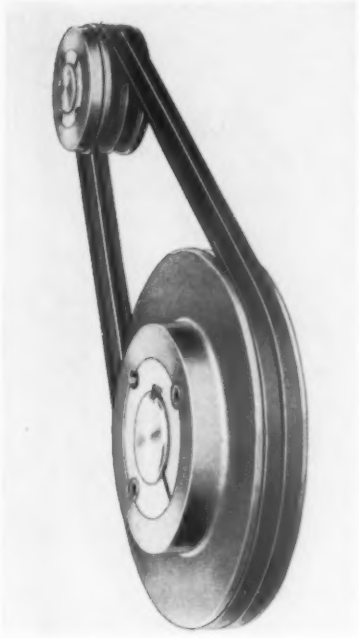
Ask your Atlas representative to show you the electric blasting cap match demonstration. See why Atlas E.B. caps lead the field in dependable performance.

EXPLOSIVES DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
Offices in principal cities

Enter 1113 on Reader Card

NEW MACHINERY

(Continued from page 194)



V-belt drives

A NEW LINE of V-belt drives features smaller and lighter sheaves and V-belts of higher capacity. Introduced under the tradename Dyna-V, the new line of drives covers the complete range of horsepower capacities available in conventional drives. With the new line, the majority of industrial drives can be handled with belts ⅜-in. wide and sheaves that are greatly reduced in width and outside diameter.

The drives are being offered in two standard groove sizes to meet all except the largest industrial requirements. Besides the ⅜-in. (nominal top width) size, known as 3V, the company is manufacturing a 5V or ⅝-in. size for higher horsepowers. Sheaves in the 3V series, from 1 to 10 grooves, are designed for drives ranging from 1 to 50 hp. The 5V series will include sheaves to take from 3 to 10 of the ⅝-in. belts, and will handle drives up to 200 hp. There is also an 8V series of made-to-order Dyna-V sheaves and 1-in. belts, for even higher horsepower requirements, ranging up to 1,500.

Taper-Lock bushings for quick and secure mounting on shafts will be an important feature of sheaves. The belts are said to be exceptionally immune to stretching and are designed with a crowned top and concave sidewalls. They are oil and heat-resistant and static conducting. *Dodge Mfg. Corp., Mishawaka, Ind.*

Enter 114 on Reader Card

(Continued on page 200)

NEW SERIES 350 BANTAMS

...fastest producing all-around performers their size ever to work the pits!

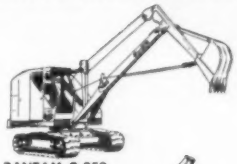
The all-new BANTAM Series 350 introduces to pit operations the greatest combination of high-income essentials yet offered.

Think of it! BANTAM's famed low-cost, top-dependability advantages, now ready and waiting for you in this bigger-production series—carrier, crawler and self-propelled models. Capacity is greater! For the carrier model shown you can handle 11-ton loads . . . work with ⅜- or ½-yd. dragline bucket . . . heap up production with ⅜- or ½-yd. digging shovel buckets and ⅝-yd. rehandling dippers. You've never dug so fast in hard materials or loaded so rapidly out of stockpile before with any machine anywhere near BANTAM's popular, go-anywhere practical size!

BIG OPTION CHOICE REWARDS YOU MORE

With the job-proved new BANTAMS *you* get the choice of features you want in a modern, big-capacity crane-excavator! Select *exactly* what your jobs call for . . . only what your budget permits: gasoline, diesel, LP-gas power . . . torque converter . . . 2-speed transmission . . . house-type or all-vision cab . . . in-cab digging lock (crawler model) . . . plus lots more, all in addition to 11 different quick-change BANTAM-built attachments to extend your job income range.

ASK YOUR BANTAM DISTRIBUTOR FOR A BANTAM JOB-TRYOUT NOW!



BANTAM C-350
crawler model . . .
7-, 8-ton capacity

BANTAM CR-350
self-propelled model . . .
11-ton capacity

SCHIELD Bantam Co.

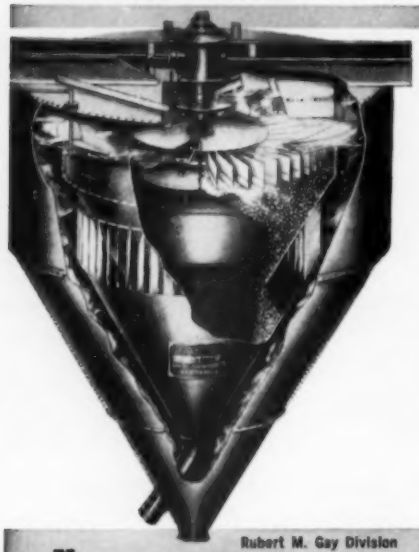
Schield Bantam Co. RP-229
216 Park Street, Waverly, Iowa
Please rush me information on the new BANTAM 350 Series:
☐ carrier mounted BANTAM,
☐ crawler mounted BANTAM,
☐ self-propelled BANTAM.

Name.....
Title.....
Company.....
Address.....
City.....Zone....State.....

WORLD'S LARGEST PRODUCER OF TRUCK CRANE-EXCAVATORS

Enter 1040 on Reader Card

USING SCREEN SEPARATIONS?
NOTHING CLASSIFIES AS
PERFECTLY AS AIR

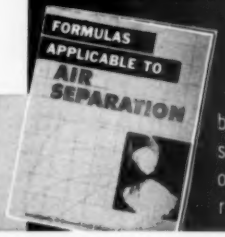


GAYCO
CENTRIFUGAL
AIR
SEPARATORS

Classify practically all dry fine materials

You get:
- CLOSER SEPARATIONS
- IMPROVED PRODUCTION
- NO UNDESIRABLE OVERSIZE.

RANGE 60 to 400 mesh.
Timken bearings.
Choice of Standard or Heavy-Duty Models.

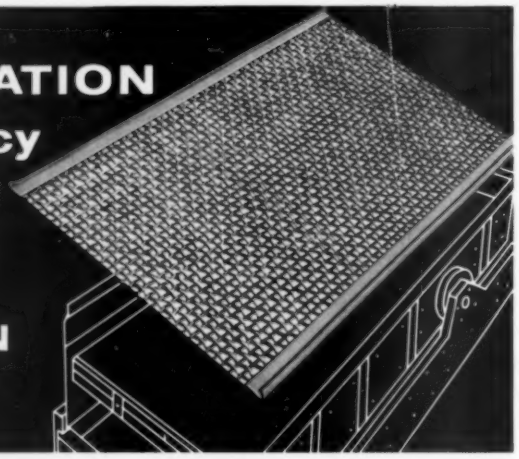


this helpful booklet sent on request

Robert M. Gay Division
UNIVERSAL ROAD MACHINERY CO.
117 Liberty St., New York 6, N. Y.
Factory and Laboratory: Kingston, N. Y.
In Canada: Watson-Jack Hopkins Ltd., Montreal

Enter 1044 on Reader Card

SEPARATION
Accuracy
Depends
on
the
SCREEN



● Accurate separation of any vibrating equipment depends upon the screen. High tonnage, reduced blindness and extra strength are a result of careful screen selection. Cleveland's years of manufacturing experience provide a wide range of accurately sized weaves for long, trouble-free life. Available in Cleloy and all commercial metals for all types of mechanical and electrical vibrating equipment. Exclusive hooked edge design reduces bending, slipping and screen distortion.

See our ad in PIT & QUARRY Yearbook

Send specifications today. Ask for a free copy of our vibrating screen bulletin.

THE CLEVELAND WIRE CLOTH & MFG. CO.
3575 East 78th Street • Cleveland 5, Ohio • Telephone: Diamond 1-1832

Enter 1045 on Reader Card

NEW MACHINERY

(Continued from page 199)

Dredging agitator

A MEDIUM WEIGHT DREDGING agitator called the Aggretator, designed to increase dredging production with a small initial investment, has been announced by this manufacturer.

Outstanding features include: 1) Double edge teeth cut through stubborn clay seams. 2) Aggretator face and side plates push large rocks away from the suction nozzle. 3) Decreased labor expense because a man catching rocks isn't required. 4) Increased pumping time because the suction nozzle won't have to be pulled to remove large rocks. 5) The Aggretator loosens cemented deposits and the loosened material flows into the suction nozzle. Sizes available are for 6, 8, 10 and 12-in. suction lines. *Van Gorp Mfg. Inc., Box 123, Pella, Iowa.*

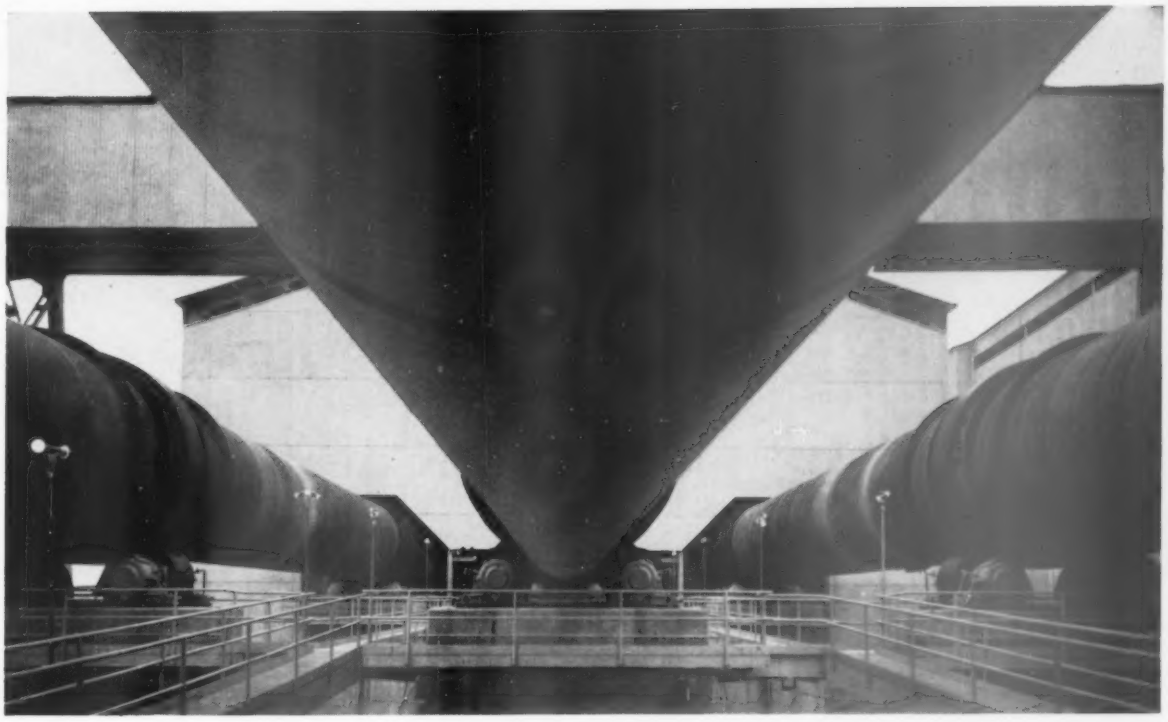
Enter 115 on Reader Card

Siliconized glass dust bags

A LINE OF SILICONIZED glass fabric filter tubes called Filter-Flex has been developed. The fabric and the tubes for bag house installations now being produced are said to cut sharply air pollution control costs.

Filter-Flex siliconized glass fabric tubes for industrial use are clamped into bag houses now used for air pollution control. The number of bags or tubes required in any such installation has been reduced, the maker reports, thus cutting the installation cost and also, due to the smaller size of the installation, reducing maintenance costs. *Coast Mfg. & Supply Co., Livermore, Calif.* **Enter 116 on Reader Card**

(Continued on page 203)



HARBISON-WALKER *Balanced* LININGS *assure* LONGER LIFE, LOWER OVERALL COSTS

In the operation of rotary cement kilns, there are many variables that affect the life for the refractory lining. Chemical composition of the charge, particle size, burning temperature, type of fuel, rate of feed—these are some of the factors that must be considered in the selection of refractories. Best results are assured when the properties of the refractories in each zone are *balanced* in relation to service life and cost.

Harbison-Walker refractories for cement plants include all classes of brick, castables, plastic firebrick, mortars and insulating refractories. Harbison-Walker offers technical service and recommendations that will result in the best balance for your particular conditions.

MAGNECON, THERMAG and MAGNEX basic arch and wedge blocks are especially suited for the most severe burning zone conditions. They firmly hold protective coatings which contribute greatly to heat insulation and to service life.

VARNON—This hard fired super-duty refractory is exceedingly resistant to abrasion and spalling, and gives outstanding service in discharge ends and nose rings.

DURO and WYLAM A are superior wear-resisting refractories for chain sections, driers and coolers.

LOTHERM—The high strength insulating brick, specifically adapted for use in the intermediate zones of rotary cement kilns, makes durable insulating linings for direct exposure to prevailing kiln conditions.

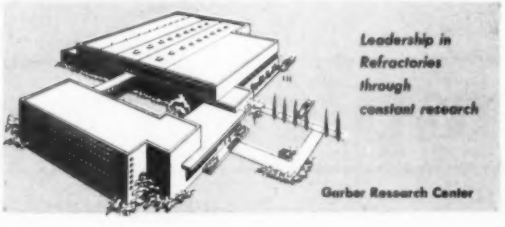
H-W EXTRA STRENGTH CASTABLE—The strongest and most abrasion-resistant among various monolithic refractories. It is easily applied around all designs of chain holders and is used to advantage in coolers, hoods, and in ducts which are subjected to erosion by dust-laden gases.

ALUSITE—(70% alumina)—the very dense and strong liner for burning zones, highly resistant to severe fluxing—readily holds the coating.

CORALITE—(80% alumina)—the most refractory liner among the high alumina classes; lower in thermal conductivity and higher in spalling resistance than basic refractories.

DIALITE and H-W SPECIAL H.A.—(50% alumina)—and **ANCHOR (60% alumina)**—are used in both burning and intermediate zones depending upon the severity of the operating conditions.

FIRECLAY BRICK—H-W brands of super-duty and high-duty available from many plants for lowest delivered costs, fulfill all needs for intermediate and cold zones.



HARBISON-WALKER REFRACTORIES COMPANY
AND SUBSIDIARIES

World's Most Complete Refractories Service

GENERAL OFFICES: PITTSBURGH 22, PENNA.

Enter 1120 on Reader Card

SIMPLICITY

GRIZZLY FEEDER

eliminates need of apron feeder and scalper . . .

3' x 10' Model OA—10—A3

Rock can't jam . . . hourly operating costs lowered

The unique design of the Simplicity Grizzly Feeder, which combines feeding and scalping in one operation, eliminates rock jams thus assuring positive uniform flow of material into the crusher.

One operator of a Simplicity Grizzly Feeder says: " . . . we have used the heaviest type of apron feeders for years and have found it necessary to shut down at least 2 or 3 times a year to hard surface the flights, inasmuch as our material is so abrasive . . . we installed a Simplicity (Grizzly) Feeder . . . with 1/4" pan and 3/16" liner . . . and are glad to report that, AFTER 9 MONTHS OF CONTINUOUS OPERATION, THE FEEDER PAN SHOWS PRACTICALLY NO WEAR WHATSOEVER, and is operating around the clock doing an excellent job of feeding at all times . . . "

3' x 12' Model OA—10—A3

The Grizzly Feeder costs less than 50% of the combined apron feeder and scalper . . . weighs considerably less . . . makes a more compact plant . . . and reduces loading height by several feet. While these factors show up so prominently in portable plant production, they are just as effective in a permanent plant installation for the crushed stone, sand and gravel and mining industries.

214

Send for Catalog #571 for complete information on OS-A-VEYOR and GRIZZLY FEEDERS.

SALES REPRESENTATIVES IN ALL PARTS OF THE U. S. A.
FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario
FOR EXPORT: Brown & Sites, 50 Church Street, New York 7, New York

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 13, MICHIGAN

Enter 1105 on Reader Card

NEW MACHINERY

(Continued from page 200)

Automatic mill lubrication

AN AUTOMATIC LUBRITROL SYSTEM to provide continuous lubrication for grinding mill trunnions and bearings has been devised. Consisting of separate low and high pressure pumps driven by a common ½-hp. motor, the system makes it unnecessary for the operator to provide lubrication while the grinding mill is running or during the critical cooling off and starting period. As a result it eliminates dry sliding between trunnion and bearing as the mill expands or contracts. The system's one pump supplies high-pressure oil directly beneath the trunnion and oil under low pressure either at the top of the trunnion or incoming chamfer of the bearing to assure complete lubrication. Each mill bearing requires one Lubritrol system. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

Enter 117 on Reader Card

Cable shovel loader

A NEW ALL CABLE shovel loader requiring no special hydraulic equipment loads, swings, and dumps without travel because it is fitted to a crawler chassis. Engineered for fast cycle time and maximum economy of motion, the versatile loader can be adapted to fit any ¾-cu. yd. or similar crawler or pneumatic tire machine. Installation is accomplished simply and easily without changes to the basic machine or use of a crowd mechanism. Shown is a 2-cu. yd. bucket on a ¾-cu. yd. machine. *M. P. McCaffrey, Inc., 2121 E. 25th St., Los Angeles 58, Calif.*

Enter 118 on Reader Card

Vibrating feeder

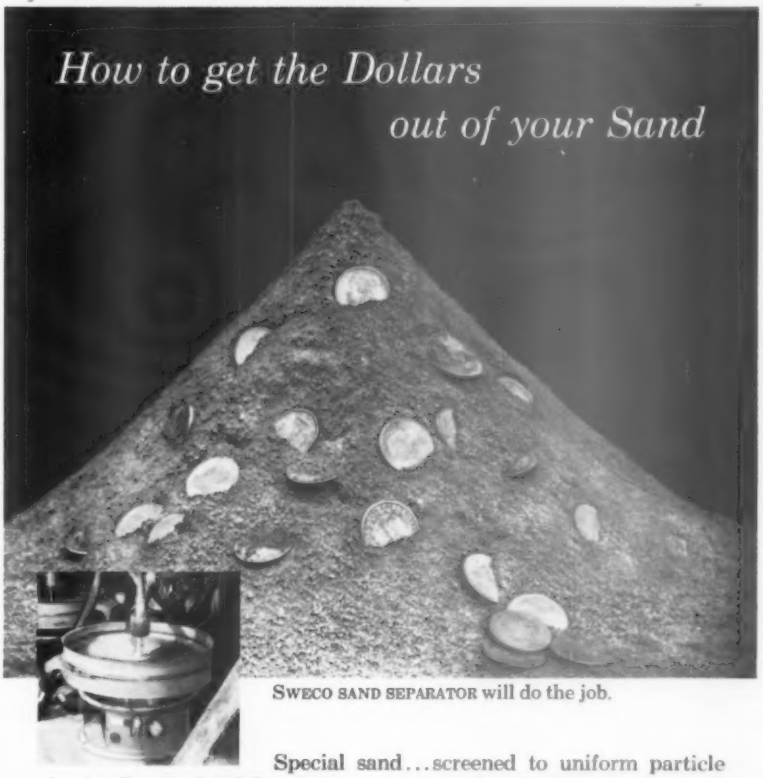
THE AMPLITROL FEEDER, a new mechanical vibrating feeder with an exclusive pneumatic control system, is being introduced. Fully variable, stepless amplitude control, and exclusive natural-frequency drive are two primary operating features of the new feeder.

The drive unit is composed of a 900 rpm., ac. motor-exciter mounted between two banks of heavy-duty, industrial air springs. Motor-exciter and springs are set in a sturdy drive housing which can be mounted either above or below the trough. Small offset weights are mounted on each end

of the motor's double shaft. In standard models only ½ hp. is required to drive troughs up to 24 in. x 8 ft. The largest standard size, 60 in. x 8 ft., uses only 3 hp. *Carrier Conveyor Corp., Louisville, Ky.*

Enter 119 on Reader Card

(Continued on page 209)



SWECO SAND SEPARATOR will do the job.

Special sand... screened to uniform particle size by SWECO Sand Separators... commands prices up to 4 times as high as regular sand.

Sand that is *uniform* in particle size is in demand for many uses –

* Fracturing oil wells
* Foundry sand
* Filtering
* Glassmaking
* Sand-blasting
* Testing laboratories

SWECO Separators are efficiently sizing special sand at high production rates in processing plants throughout the country.

You can upgrade your sand products by using a SWECO *Sand Separator. Write for a screening demonstration in your plant. Or send for new 20-page catalog and sand screening data.*

Write Dept. S-314-14

Southwestern Engineering Company
4800 Santa Fe Avenue, Los Angeles 58, California
Engineers–Constructors–Manufacturers

SWECO

SEPARATORS FOR THE ROCK PRODUCTS INDUSTRY

Enter 1046 on Reader Card

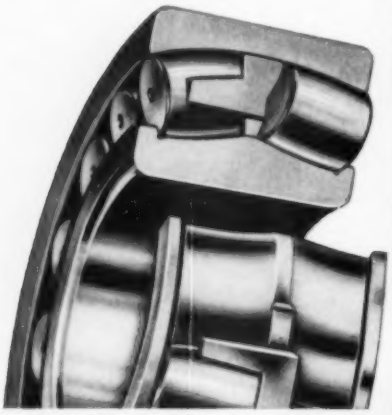
SKF engineering solves major bearing problems

NEW VIBRATING SCREEN BEARING NOW BEING PRODUCED IN A FULL SIZE RANGE FOR NEW AND EXISTING EQUIPMENT

Recently, SKF introduced a new spherical roller bearing that offers up to 40% more load-carrying capacity and 3 times longer fatigue life than previous bearings. The bearing is now being used in vibrating screens where it withstands the eccentric motion peculiar to these machines.

SKF is producing this high-capacity bearing in a full size range (see chart)—and in additional sizes or variations on request.

The bearing was specially developed by SKF for new vibrating screens designed for the high production demands of today's users. However, it can also be applied in existing screens. (Boundary dimensions conform to those of the SKF 223 series.) Its higher capacity and longer fatigue life should prove particularly valuable in equipment operating in continuous service at maximum load.



New bearing has long rollers, high load-carrying capacity and one-piece cage designed to cope with screens' eccentric motion.

Bearing No.	Bore mm.	Bore in.	OD mm.	OD in.	Width mm.	Width in.	Basic Dynamic Load Rating C lb.
452311	55	2.1654	120	4.7244	43	1.6929	37800
452313	65	2.5591	140	5.5118	48	1.8898	48100
452314	70	2.7559	150	5.9055	51	2.0079	55800
452315	75	2.9528	160	6.2992	55	2.1654	62400
452316	80	3.1496	170	6.6929	58	2.2835	71400
452317	85	3.3465	180	7.0866	60	2.3622	76400
452318	90	3.5433	190	7.4803	64	2.5197	90600
452319	95	3.7402	200	7.8740	67	2.6378	97500
452320	100	3.9370	215	8.4646	73	2.8740	116000
452322	110	4.3307	240	9.4488	80	3.1496	137000
452324	120	4.7244	260	10.2362	86	3.3858	159000
452326	130	5.1181	280	11.0236	93	3.6614	183000
452328	140	5.5118	300	11.8110	102	4.0157	211000
452332	160	6.2992	340	13.3858	114	4.4882	260000

These bearings have ample internal clearance for screen applications; close OD tolerance supplied on request.

For full details on this new high-capacity screen bearing, send for Catalog No. 466. Call or write to the nearest SKF distributor, sales office, or SKF Industries, Inc., Philadelphia 32, Pa.

5910

Spherical, Cylindrical, Ball, and Timken® Tapered Roller Bearings

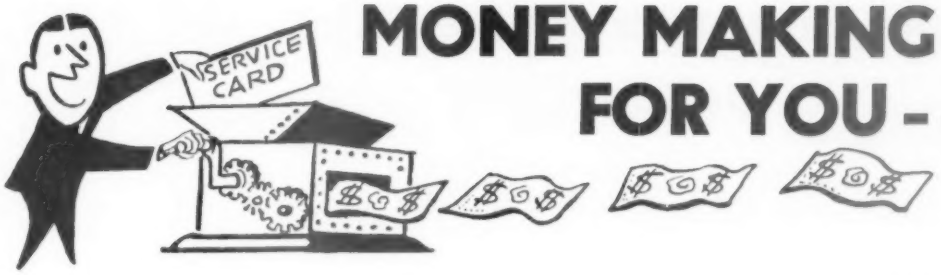
EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

®REG. U. S. PAT. OFF.

Enter 1099 on Reader Card



MONEY MAKING IDEAS FOR YOU - - - FREE

USE THESE CARDS FOR MORE INFORMATION ON:

1. **Advertised Products**
2. **New Machinery**
3. **New Literature**

How to use:

Each advertisement in this issue is provided with a key number, so is each new machinery and new literature item. For more information on any of these items simply fill in the key numbers in the appropriate space on the adjoining card and send it to us. We'll do the rest.

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

FIRST CLASS
PERMIT NO. 1417
CHICAGO, ILL.

– POSTAGE WILL BE PAID BY –

ROCK PRODUCTS
79 WEST MONROE ST.
CHICAGO 3, ILL.

READER-SERVICE CARD RP-5-59

ROCK PRODUCTS
79 W. Monroe St.

MAY, 1959
Chicago 3, Illinois

Cannot be serviced after July 1, 1959 postmark.

Please print or type

Name _____ Position _____

Company (In Full) _____

Company Address _____ City _____ Zone _____ State _____

MAIN PRODUCT OF PLANT _____ CAPACITY _____

[THIS INFORMATION WILL HELP US GIVE YOU MORE COMPLETE SERVICE.]

Send information on items identified by key numbers beside or below items of interest to you. List your choice in numerical order. Limit 10 per card.

(1) ..... (2) ..... (3) ..... (4) ..... (5) .....

(6) ..... (7) ..... (8) ..... (9) ..... (10) .....

IF NO KEY NUMBER, USE COMPANY NAME

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

FIRST CLASS
PERMIT NO. 1417
CHICAGO, ILL.

– POSTAGE WILL BE PAID BY –

ROCK PRODUCTS
79 WEST MONROE ST.
CHICAGO 3, ILL.

MONEY MAKING IDEAS FOR YOU - - - FREE

READER-SERVICE CARD

RP-5-59

ROCK PRODUCTS
79 W. Monroe St.

MAY, 1959
Chicago 3, Illinois

Cannot be serviced after July 1, 1959 postmark.

Please print or type

Name _____ Position _____

Company (In Full) _____

Company Address _____ City _____ Zone _____ State _____

MAIN PRODUCT OF PLANT _____ CAPACITY _____

[THIS INFORMATION WILL HELP US GIVE YOU MORE COMPLETE SERVICE.]

Send information on items identified by key numbers beside or below items of interest to you. List your choice in numerical order. Limit 10 per card.

(1) ..... (2) ..... (3) ..... (4) ..... (5) .....

(6) ..... (7) ..... (8) ..... (9) ..... (10) .....

IF NO KEY NUMBER, USE COMPANY NAME

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

FIRST CLASS
PERMIT NO. 1417
CHICAGO, ILL.

– POSTAGE WILL BE PAID BY –

ROCK PRODUCTS
79 WEST MONROE ST.
CHICAGO 3, ILL.

READER-SERVICE CARD

RP-5-59

ROCK PRODUCTS
79 W. Monroe St.

MAY, 1959
Chicago 3, Illinois

Cannot be serviced after July 1, 1959 postmark.

Please print or type

Name _____ Position _____

Company (In Full) _____

Company Address _____ City _____ Zone _____ State _____

MAIN PRODUCT OF PLANT _____ CAPACITY _____

[THIS INFORMATION WILL HELP US GIVE YOU MORE COMPLETE SERVICE.]

Send information on items identified by key numbers beside or below items of interest to you. List your choice in numerical order. Limit 10 per card.

(1) ..... (2) ..... (3) ..... (4) ..... (5) .....

(6) ..... (7) ..... (8) ..... (9) ..... (10) .....

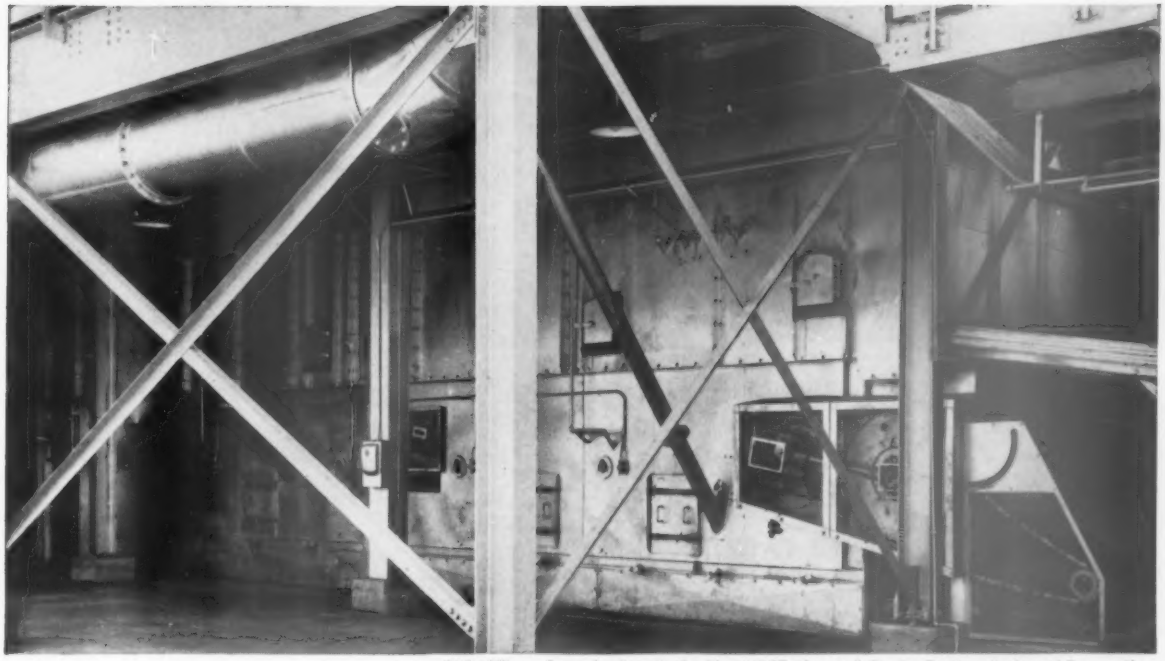
IF NO KEY NUMBER, USE COMPANY NAME

YOU CAN RECEIVE MORE INFORMATION ON:

1. **Advertised Products**
2. **New Machinery**
3. **New Literature**

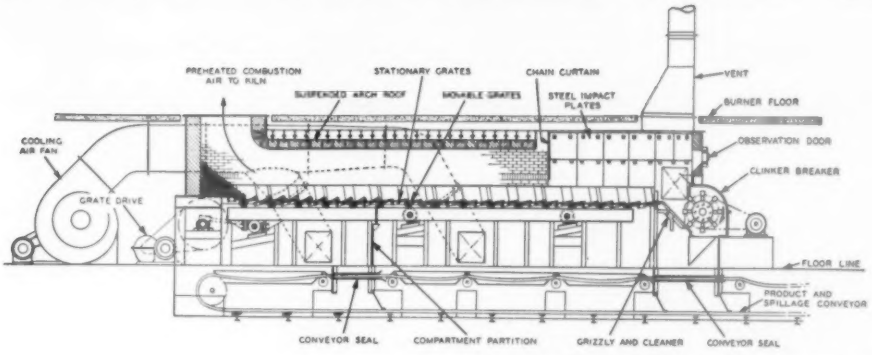
How to use:

Each advertisement in this issue is provided with a key number, so is each new machinery and new literature item. For more information on any of these items simply fill in the key numbers in the appropriate space on the adjoining card and send it to us. We'll do the rest.



Side View from feed end of a 7' x 44' Horizontal-Grate Cooler, designed for cooling 4,000 barrels of Portland cement clinker per day, showing crank type grate drive

New Fuller HORIZONTAL-Grate Cooler



Cross-section drawing showing construction and arrangement of a typical Horizontal-Grate Cooler with clinker breaker.

Compact . . . Economical . . . Fast-cooling. Already proven in use, the compact, efficient design of Fuller's new Horizontal-Grate Cooler promises savings for many plants. It's an ideal choice where headroom is at a minimum . . . where a short, compact unit is desired.

Like the famous Fuller Inclined-Grate Cooler, the new Horizontal-Grate type is meeting with wide acceptance. One of the new units, already in operation, is shown above.

A Fuller Horizontal-Grate Cooler or an Inclined-Grate unit is the right answer to your cooling needs. Fuller coolers are used for a wide range of materials including lime, dolomite, cement clinker, iron nodules, phosphate nodules, sinter, ores, and others. Fuller sales engineers will be glad to discuss your cooling problems and make recommendations for your plant—without obligation, of course.

Features of the Fuller HORIZONTAL-Grate Cooler

- Requires a minimum of headroom
- Short length if necessary
- Better secondary air temperature control
- Less refractories
- Less installation time
- More rapid clinker distribution
- More uniform bed thickness

FULLER COMPANY
GENERAL AMERICAN
TRADE MARK

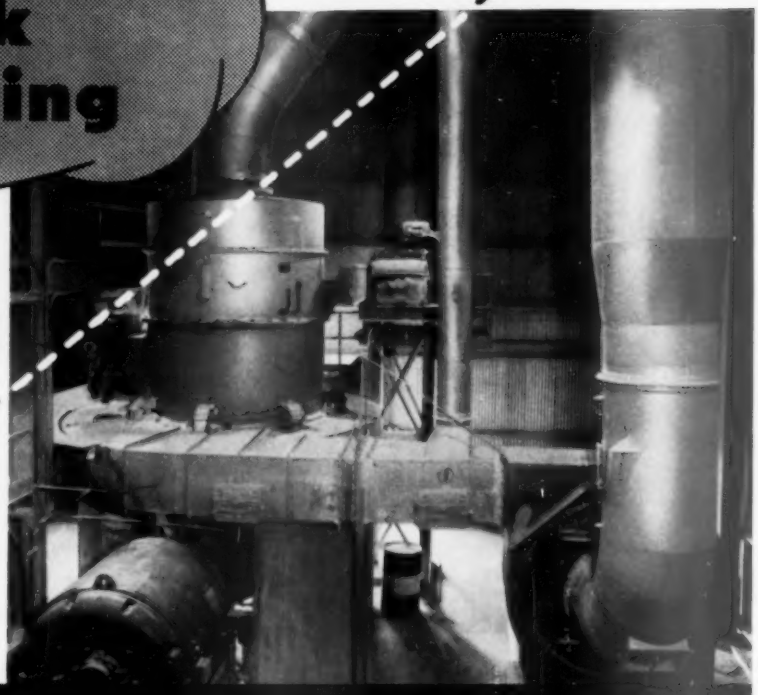
Fuller
pioneers in harnessing AIR

FULLER COMPANY
102 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
Birmingham ● Chicago ● Kansas City ● Los Angeles ● New York ● San Francisco ● Seattle

Enter 1098 on Reader Card

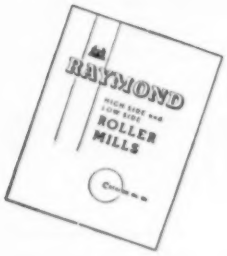
4578
CO-38

phosphate rock grinding



Raymond Super Roller Mill at Lake Charles Harbor and Terminal District, Lake Charles, La. — pulverizing phosphate rock.

--where Raymond Roller Mills are *FIRST*



For complete details on Roller Mills, write for Raymond Catalog No. 79.

The use of Raymond Roller Mills for grinding phosphate rock has multiplied tenfold in the past fifteen years.*

Today more than 200 Raymond installations, similiar to the set-up above, are capable of handling better than 16 million tons yearly in the various grades specified for acidulation, acid production, and direct application to the soil.

This industry-wide acceptance is based on the ability of Raymond equipment to pulverize all grades and mixtures . . . to provide a range of capacities for large or small plants . . . and to produce a uniform finished material with characteristic Roller Mill economy.

Lowest in initial cost, power cost, and overall cost of operating.
Automatic dust-free operation with minimum attention.
Ease of fineness control, and optimum particle size distribution.
Combined drying, grinding, separating and conveying in one simple operation.
Minimum space requirements, and flexibility of installation to fit plant layout.
Dependable long service life and continuous trouble-free operation for extended runs.

Whatever your grinding problem, Raymond can give you experienced engineering service in selection of equipment and in the practical design of mill installation.

*Latest figures show that Raymond Roller Mills can handle better than 16 million tons yearly based on 350 two shifts a day operation.

COMBUSTION ENGINEERING, INC.
Raymond Division
1108 W. BLACKHAWK ST.
CHICAGO 22, ILLINOIS
Combustion Engineering-Superheater Ltd., Montreal, Canada
SALES OFFICES IN PRINCIPAL CITIES

Enter 1097 on Reader Card

NEW MACHINERY

(Continued from page 203)

Abrasion test rig

A MACHINE HAS BEEN PLACED on the market which is designed to be used in making the Los Angeles abrasion test for aggregates. It features revolution counter switch, quickly renewable baffle attached to the inner shell instead of the cover plate, sealed ball bearings, motorized gear reduction unit. A ¾-hp. motor is supplied. *Forney's Inc., Tester Div., P.O. Box 310, New Castle, Pa.*

Enter 125 on Reader Card

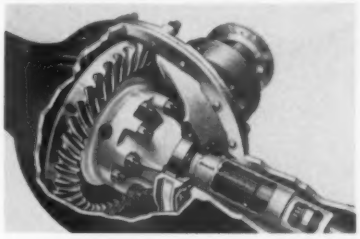
Rotary drill bit

THE TYPE WBS, a unique rock bit, has been announced. The rows of teeth are so arranged as to cover the entire hole bottom being drilled. The WBS is designed to drill extremely hard formations such as chert, quartzite, granite and pyrite. The cones are offset two deg. from apex to create a chipping action on the hole bottom at all times. A feature of the new WBS design is its use in percussion down-the-hole hammer drilling. Available in 5⅝, 6, 6¼, 6¾, and 7⅞-in. sizes. *Oil Tool Mfg. Co., Inc., Tonkawa, Oklahoma.*

Enter 126 on Reader Card

Truck traction equalizer

A TRACTION-IMPROVING DEVICE has just been announced. Known as the traction equalizer, the limited-slip differential imparts to the wheel with the best road adhesion a substantial increase in tractive effort. So effective is this new device that it is said to propel a vehicle even if one of the driving wheels is completely off the ground.



Another advantage: The tendency of the vehicle to swerve when one wheel suddenly loses traction is eliminated because wheel spinning is reduced. *Rockwell-Standard Corp., Transmission and Axle Div., Detroit, Mich.*

Enter 127 on Reader Card

Vibrating screen has phasing bars, air springs

THE NEW "SCREEN MASTER" horizontal vibrating screen is equipped with phasing-bar and air-spring system. Phasing bars and air springs replace conventional springs. All parts —basket, screen wire and phasing bars —act in unison (or in phase), preventing blinding and blanketing of material on screen wire.

The screen has full screening area for greater capacities. A 4 x 12-ft. screen has a full 48 sq. ft. of screening area. The vibrator unit incorporates an internal breather, vapor-type lubrication and hydraulic-bearing removal. Parts are interchangeable—there are no left or right-hand parts. *Universal Engineering Corp., 625 "C" Ave., N.W., Cedar Rapids, Iowa.*

Enter 128 on Reader Card

(Continued on page 210)

Automate the blending of cement formulation with a MERRICK FEEDOWEIGHT

Perfect uniformity of your cement formulation . . . day in, day out . . . is assured when you use Merrick FEEDOWEIGHTS®. The FEEDOWEIGHT automatically and continuously feeds, blends and proportions *by weight* clinker, gypsum, limestone and all other bulk materials that are used in the manufacture of cement. Used in cement plants all over the world, the FEEDOWEIGHT guarantees finished cement that will meet the rigid specifications of the construction industry.

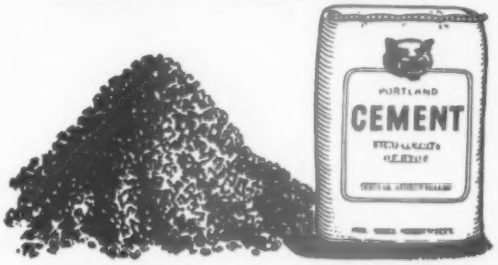
Merrick also offers the famous WEIGHTOMETER® continuous conveyor scale. For information on either or both of these machines, write us today.

MERRICK *fifty years of "firsts" in automatic weighing*

MERRICK SCALE MANUFACTURING COMPANY
184 AUTUMN STREET, PASSAIC, N. J.

Enter 1090 on Reader Card

REDUCE YOUR RATIO



OF FUEL -to- CEMENT

In these days of increasing fuel and labor costs, every economy you can make is important. Here is a sure way to SAVE FUEL. Cambridge Gas Analyzers will provide the Burner with a continuous and simultaneous record of the oxygen, carbon dioxide, and combustibles in the flue gas. O_2 analysis serves to warn against excessive air supply; combustibles analysis indicates oxygen demand under all conditions; CO_2 analysis reflects state of calcining process. Cambridge Instruments make uniform kiln operations possible with ease. Savings effected pay for installation in short time.

Send for literature

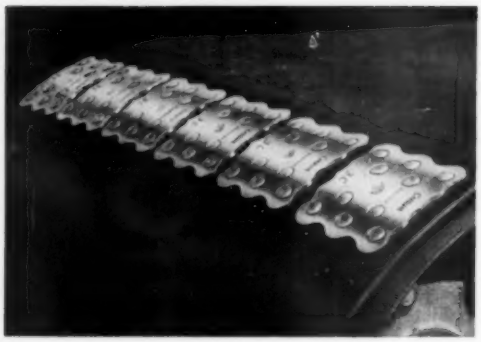
CAMBRIDGE INSTRUMENT CO., INC.
3547 Grand Central Terminal, New York 17, N.Y.

CAMBRIDGE GAS ANALYZERS

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

Enter 1091 on Reader Card

Excessive abrasive conditions now solved!



Conveyor belting subjected to heavy abrasive work can now be readily joined for maximum service with the new CRESCENT Countersunk Belt Fasteners. The CRESCENT Countersunk-Head Rivets are driven flush with the surface of the CRESCENT Countersunk Plates, thereby reducing wear to a very minimum.

A hammer is the only tool required to make a quick, tight and long-lived joining. The CRESCENT Countersunk-Head Rivets are self-piercing and self-clinching, thus no holes to align and bore . . . a big time saver.

Don't gamble . . . our extensive experience over the years in joining and repairing conveyor, elevator and transmission belting of any length, thickness and width is at your disposal without obligation. Get the facts today!

CRESCENT BELT FASTENER COMPANY

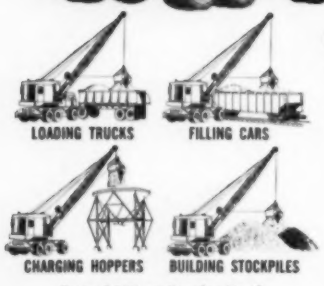
381 FOURTH AVENUE, NEW YORK 16, NEW YORK

65 Market Street, Toronto 1, Ontario, Canada — 32 Paradise Street, Birmingham 1, England

DISTRIBUTORS THROUGHOUT THE WORLD

CRESCENT BELT FASTENERS fastest, most durable and most economical method of joining conveyor, elevator and transmission belting

Enter 1088 on Reader Card



A MAXI MOUNTED SELF-PROPELLED, ONE-MAN OPERATED CLAMSHELL CRANE . . . DOES THEM ALL . . . YET IS FAST MOVING!

Before considering ANY single-purpose machine, or crawler mounted clamshell, get the facts on how a multi-purpose, MAXI mounted crane can cut your operating and labor costs.

See your local crane dealer, or write to:

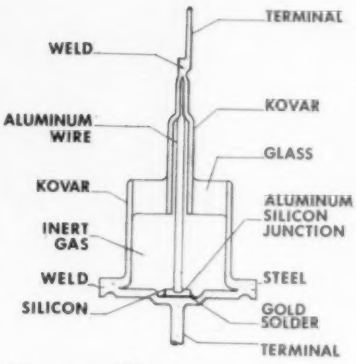
THE MAXI CORPORATION

904 SOUTH TURNBULL CAÑON ROAD, CITY OF INDUSTRY, CALIFORNIA

Enter 1089 on Reader Card

NEW MACHINERY

(Continued from page 209)



Silicon rectifier

A SMALL, LIGHTWEIGHT silicon junction rectifier has been developed for use in electrical dust precipitators. As the result of an exhaustive laboratory and field testing program, a silicon rectifier has been designed to perform reliably for a long period of time.

The manufacturer claims that silicon rectifiers offer advantages that include ability to withstand corrosive atmospheres, efficient operation over a wide temperature range and ability to take severe shock and vibration.

Silicon junction rectifiers offer reduced operating and maintenance costs. Operating efficiency is estimated to be better than 96 percent. Maintenance is practically nothing, since there are no moving parts to wear out, no lubrication is required and the small, lightweight unit is quickly and easily installed. *The Thermix Corp., Greenwich, Conn.*

Enter 123 on Reader Card

Dust collector

A BAG-TYPE DUST COLLECTOR has no moving parts or mechanical cleaning equipment. Called the Mikro-Pulsaire, the collector has venturis atop the bag mounts. When the time comes to clean a bag, a solenoid opens a valve, permitting 60-psi. air to rush down through a nozzle and through the venturi of the bag being cleaned.

Largest of the four models available can handle up to 5,000 cfm. of exhaust air. Efficiency of collection on one dust having .1 micron ultimate particle size averaged 99.9 percent at 50 grains per cu. ft. dust loading, the maker reports. The units permit continuous operation; with no moving parts, no lubrication is required. *Pulverizing Machinery Div., Metals Disintegrating Co., Inc., Chatham Rd., Summit, N.J.*

Enter 124 on Reader Card

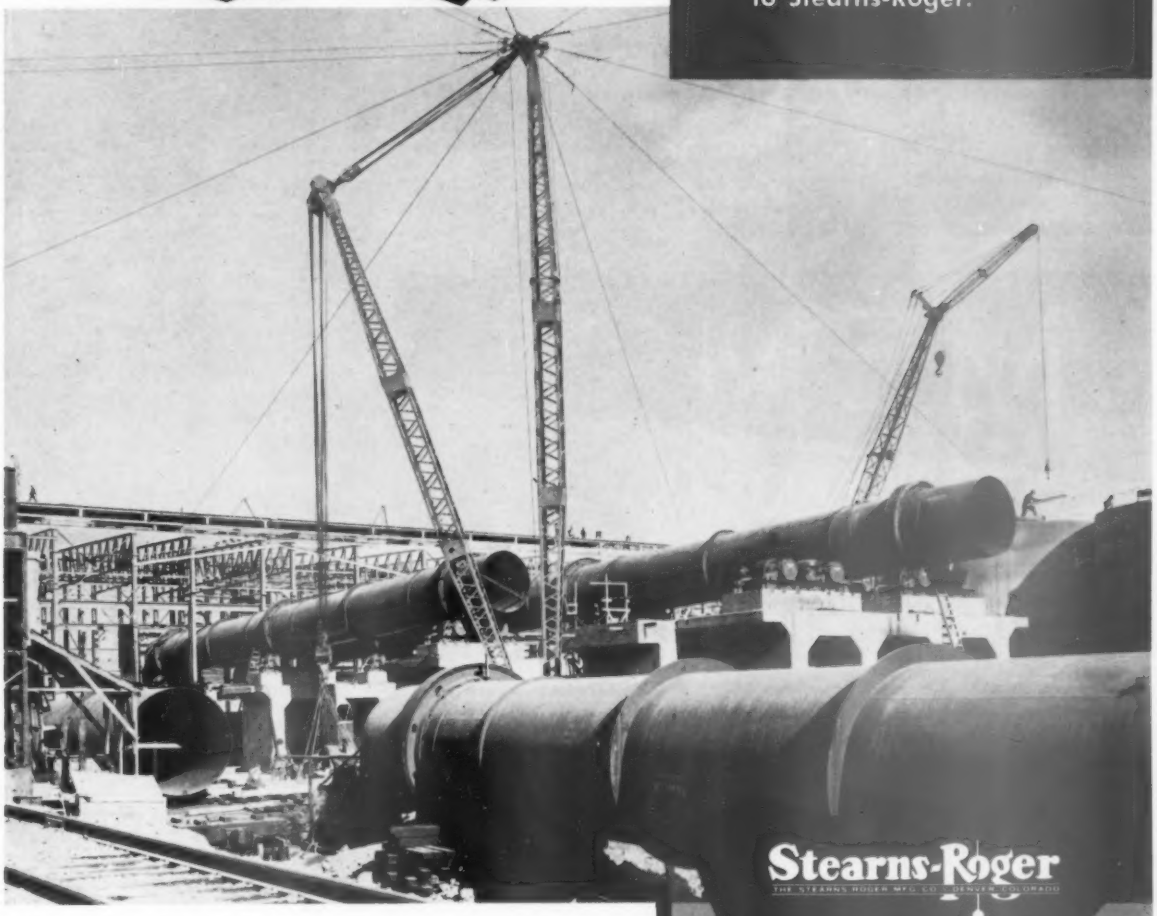
(Continued on page 212)

STEARNS-ROGER BUILT

for

THOUSANDS OF BARRELS OF CLINKER

Two cement kilns each ten feet in diameter by four hundred feet long represent but one step in Stearns-Roger's complete service for design, engineering, fabrication and construction of cement plants. Call on the skill of qualified engineers working from long experience. For a smooth running plant, give the assignment to Stearns-Roger.



Design, Engineering, Fabrication, Procurement, Construction

Stearns-Roger

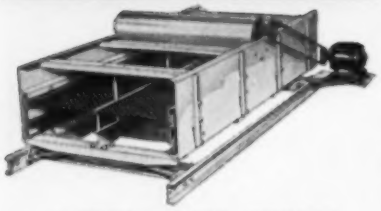
THE STEARNS ROGER MFG. CO. · DENVER, COLORADO

DENVER, HOUSTON, EL PASO, SALT LAKE CITY

STEARNS-ROGER ENGINEERING COMPANY, LTD., CALGARY

Enter 1096 on Reader Card

FOR PROFITABLE SCREENING USE
UNIVERSALS



- FAST, SIMPLE, RUGGED
- DEPENDABLE
- ECONOMICAL
- STOCK DELIVERIES
- FAST SERVICE

Write today for free catalog No. 150 on screens and screening

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Enter 1087 on Reader Card

NEW MACHINERY

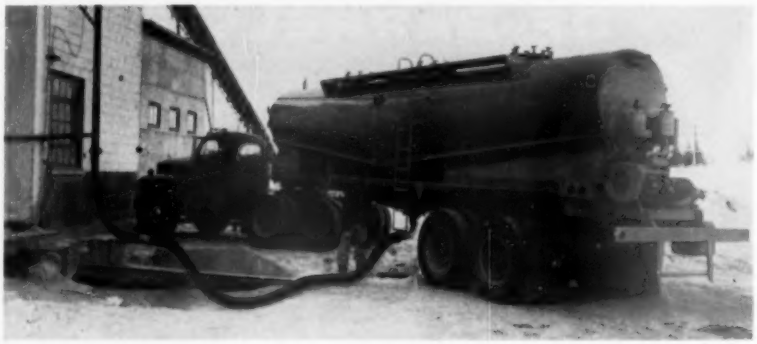
(Continued from page 210)

Vibrating feeder

A HI-VI VIBRATORY FEEDER, Model V3B-70A, with 50-tph. capacity, has been announced. Features, as in other feeders in the line, include an electromagnetic drive system which operates without a rectifier and without adjustment. Like smaller models, the new 70A employs a spring system of special epoxy-boned fiberglas, which according to the maker has proved long lived, and is not subject to corrosion, abrasion, fatigue and other failings characteristic of steel spring systems. Sizes are: in flat trays, 18 x 42 and 12 x 60 in., and in tubular trays, 12 x 36 and 8 x 60 in. *Eriez Mfg. Co., Erie 6, Pennsylvania.*

Enter 120 on Reader Card

Bulk cement hauler has Airslide discharge



THE BULK HAUL TANK-TRAILER, capable of pumping cement a distance of 105 ft. or more, has been announced. Airslide pneumatic unloading in the 105 to 120-bbl. capacity unit is accomplished with a blower mounted on the tractor and connected to the power take-off shaft. An optional discharge method, illustrated, is with the blower mounted at the rear. Discharge rate of the pressure tank is 3⅓ bbl. per minute through a 4-in. hose. At 11-lb. pressure, cement is pneumatically conveyed a distance of 20 ft. horizontally and 85 ft. vertically directly into a storage elevator. Need for a cross conveyor and bucket elevator is eliminated. *Fruehauf Trailer Co., 10940 Harper, Detroit 32, Mich.*

Enter 121 on Reader Card

MEMO

To PRODUCERS

Just checking . . . . have you noticed the advertisements which apply to your operation?

ROCK PRODUCTS' Advertisers regularly keep you well informed concerning both new equipment and processes.

Why not glance through this issue again to make sure nothing of importance to your business has missed your attention.

30-ton excavator

A 30-TON, 8 x 4 MOTO-CRANE has been announced. A top feature of the MC-430 carrier is the rocker-beam-mounted front bogie that doubles the front axle carrying capacity.

Other carrier features are: 8-wheel brakes, 15 forward speeds to 47 mph., high traction differentials and "through drive" that delivers engine torque to the axle having tractive ability. The turntable, attached to the carrier with a maintenance-free Shear Ball mounting, can be located in three different positions for maximum crane lifting capacities, best digging ranges or for general purpose work. *Thew Shovel Co., Lorain, Ohio.*

Enter 122 on Reader Card

END

E-M-pioneered Incher provides quick, safe spotting of mills. It turns mills literally inch-by-inch to desired position merely by pushing a button. One E-M Incher Control can be used to spot several mills.

At Carbon Limestone Company...

"E-M INCHER SAVES US $1,600 A YEAR"

... cuts starter maintenance by over 90%

● At Carbon Limestone Co., Hillsville, Pa., a limestone pulverizing mill must be stopped and spotted every four hours for lubrication. Spotting formerly took about 15 minutes and was done by "jogging" (flicking the starting switch to give the mill a momentary jolt of power). This slow, "hit-and-miss" method resulted in frequent production halts for repairs to the overworked starting system.

To remedy this situation Carbon Limestone installed an E-M Incher. Result: Push-button spotting requiring only *one minute.* In the words of General Superintendent U. F. Masson:

The E-M Incher... *"Increased productive hours of pulverizing mill 30 minutes in each 8 hours or 6¼%. Reduction of maintenance of starting equipment 90%."*

The E-M Incher can save you big money, too, if you are now using one of the old, time-consuming methods of spotting synchronous motor driven mills.

Write the factory now for complete information about the Incher, and call your nearest E-M Field Engineer.

This mill at Carbon Limestone Co. is quickly positioned by the E-M Incher Control shown in the large illustration.

E-M

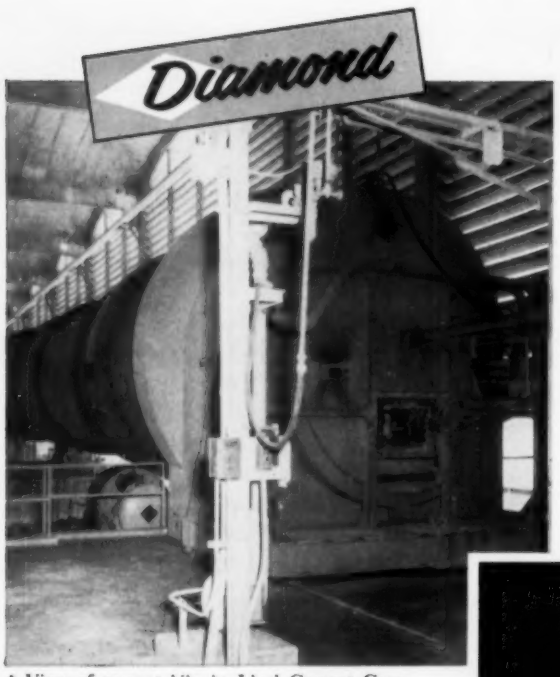
3100-TPA-2191

ELECTRIC MACHINERY MFG. COMPANY

MINNEAPOLIS 13, MINNESOTA

Specialists in making controls do
EXACTLY WHAT YOU WANT THEM TO

Enter 1095 on Reader Card



▲ View of cement kiln in Ideal Cement Company's Houston plant. "Utiliscope" Camera may be seen at right side.

▲ Close-up of "Utiliscope" Camera watching interior of kiln. Air cooled "Utiliport" protects lens against high temperature.

▼ Control Room. Operator sees kiln interior on TV monitor.

IDEAL CEMENT COMPANY
(HOUSTON PLANT)

PRODUCES

MORE UNIFORM CEMENT CLINKER with DIAMOND "UTILISCOPE" TELEVISION

Camera Operates Efficiently in High Temperature Area . . . Provides Economy and Better Plant Layout

Close observation of the interior of the kiln is important in production of uniform high quality cement clinker. But to station an operator at an observation port on each kiln is inefficient use of man power. Also placing the instruments and controls in that location hinders good plant layout.

This problem was solved in the Ideal Cement Company's new Houston Plant with a "Utiliscope", Diamond heavy duty Television System. A camera was installed on each of the two kilns to "see" the interior. Monitors in the air conditioned control room enable the operator to keep close watch on the burning conditions. He can continually check on the flow of slurry and formation of clinker. Instruments and controls are also grouped in this room, so he can make immediate corrections when they are needed.

High ambient temperature (up to 2100°F at the viewing port) was no serious problem. The Diamond air cooled "Utiliport" provides adequate protection to the camera lens. The "Utiliscope" camera, which is built for tough conditions, is air cooled in this installation.

Diamond Heavy Duty Television is built to stand severe service. High temperature, dust, dirt, vibration, etc. do not impair its dependable operation.

This is only one of many ways in which the Diamond "Utiliscope" can save money, improve operation, and help produce a better product. It has been proved in a wide variety of plants and applications.

Explore the possibilities of "Utiliscope" for *your* plant. Write us for more information.

DIAMOND POWER SPECIALTY CORP.

LANCASTER, OHIO *Diamond Specialty Limited, Windsor, Ontario*

8297

Enter 1117 on Reader Card

Enter 1118 on Reader Card

1 1/2 yd. TROJAN

...Packed with Operating "Extras"

There's no mistaking this new Trojan 124 — a standout performer in any task force, on any job . . . This is the 1½ cu. yd. tractor shovel that you have been asking for . . . The new job-rated Trojan proudly presents an imposing combination of extra operating benefits that can only spell P-R-O-F-I-T to the user.

At no extra cost Trojan offers the safety and greater visibility made possible by Trojan's *patented safety curve arms*, a favorite with tractor shovel operators . . . the maximum stability provided by wide-tread tires . . . 10,000 lbs. rated lifting capacity, highest for any machine of this size . . . greater carrying capacity . . . 40° bucket tip back at carry position . . . full power shift transmission . . . a variety of bucket sizes from 1½ to 2 cubic yards . . . choice of gas or diesel power . . . plus the widely preferred Trojan features that insure low-cost, efficient production on so many jobs today!

Give your Trojan distributor a few minutes of your time. That's all he needs to prove to you that the new Trojan Model 124 can be your most valuable piece of working equipment . . . Ask for a demonstration — see it in action!

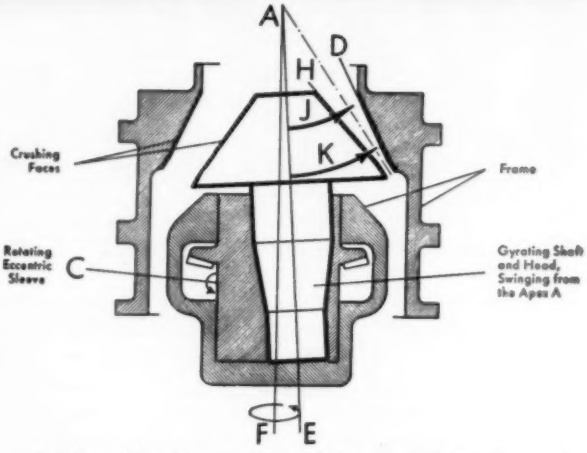
Take full advantage of the variety of applications your Trojan 124 can offer, and all other Trojan models as well, with such quick-change attachments as pallet forks, backhoe, snow plow, dozer blade, crane hook and special buckets.

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

TROJAN DIVISION, THE YALE & TOWNE MANUFACTURING COMPANY, BATAVIA, NEW YORK, SAN LEANDRO, CALIFORNIA

Compact KUE-KEN® for economical reduction crushing in permanent or portable plants

Profitable secondary crushing is practical in any flow sheet with Kue-Ken gyratory crushing. Compact and strong yet without excess weight, choke-fed Kue-Ken fits easily where headroom is limited and is readily portable. Charging conveyors are lower and shorter . . . lower first cost, lower operating cost. Designed on the exclusive Kue-Ken "crushing without rubbing" principle that reduces the main cause of liner wear, Kue-Ken liners give far longer service under continuing, hard materials crushing. For lowest cost-per-ton crushing, design your operation around Kue-Ken gyratory crushers.



See how Kue-Ken crushing faces pass through crushing zones on arcs J and K to crush rock squarely without rubbing liners.

Write for Catalog

KUE-KEN® CRUSHERS

"Crushing without Rubbing"

STRAUB MFG. CO., INC. 8387 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

Dealers:

SEATTLE, WASH.	Washington Machinery Co.
VANCOUVER, B. C.	Universal Equipment Co.
SALT LAKE CITY, UTAH	Lund Machinery Co.
SAN ANTONIO, TEX.	Closner Equipment Co.
LOS ANGELES, CALIF.	Garlinghouse, Fremon Co.
SAN FRANCISCO, CALIF.	Aggregate Engineers, Inc.
BISMARCK, NORTH DAKOTA	Midwest Equipment Co.
PHOENIX, ARIZ.	Road Machinery Co.

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.

Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

Enter 1093 on Reader Card

Kittanning Brick Company's Diesel-powered Plymouth hauls heavy loads of clay from mine to tipple. Mine-O-Motive unit pulls big loads with exceptional economy.

"7-ton PLYMOUTH Hauls 14 Cars Per Trip"

Reports Kittanning Brick Company, Adrian, Pa.

"Using a Plymouth Mine-O-Motive, we can now pull 14 cars or more from our clay working area to the tipple, with a crew of only 2 men," reports the president of Kittanning Brick Company, Adrian, Pa.

"The hauling efficiency provided by our Plymouth Diesel has enabled us to increase our daily clay production—saves us both time and money. Our system has improved employee morale and we always have empty cars to load, which reduces total man-hours per ton.

"Our narrow-gauge Model FMD hauls clay 48-hours a week over a 2-mile route, consumes only ½ gallon of fuel per hour. Four-gear shift enables it to pull a 14-car load over 6% grades with full power at all times."

For full information on a Plymouth designed to fit your haulage needs, send a brief outline of your operations to: The Fate-Root-Heath Company, Dept. A-5, Plymouth, Ohio.

RAIL POWER

PLYMOUTH® LOCOMOTIVES

WITH TORQOMOTIVE DRIVE

PLYMOUTH LOCOMOTIVES in Progressive Industry throughout the world

Looking for a modern 2½ yd. shovel?

CHECK THESE MODERN FEATURES

- ✔ Disc type clutches
- ✔ Forced air cooling
- ✔ Multi-Stage Torque Converter
- ✔ Exclusive Powerflo slide pinion
- ✔ Simplicity of design . . . only 14 gears and pinions
- ✔ Simple jack adjustment of crawler treads
- ✔ Dependable air or manual controls
- ✔ Self-removing counterweight
- ✔ Convertible to crane, dragline and trench hoe

SEE THE *NEW* MANITOWOC MODEL 3100

1st IN PERFORMANCE

1st IN OUTPUT

Here is a new Manitowoc shovel in the 2½ yd. range that will outproduce and outperform anything in its class. Completely modern in design, the Model 3100 provides many exclusive, advanced features that contribute to more yardage per shift at lower net cost per yard.

Though it's a big machine, with all the big machine design and construction features, the Model 3100 handles, travels and can be moved from job to job with small machine ease. It's easy to make fast, short moves by truck because a minimum number of rugged, precisely machined fittings allow you to remove the counterweight, *complete* crawler assemblies and other components without time consuming advance preparation and effort . . . *and* the 3100's overall maximum outside width of only 11'1" (within ordinary RR shipping clearances) means you can run it aboard a standard flat car, as is, and you're ready to go!

The Manitowoc 3100 is a big producer and big earner on any job—shovel, crane, back hoe, clam or dragline. Ask your Manitowoc distributor for additional details and specifications on the new Manitowoc Model 3100 . . . a really modern 2½ yard excavator.

Manitowoc

MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 100 TON	1¼-YD. - 5½-YD.	1¼-YD. - 6-YD.	1¼-YD. - 3-YD.

Enter 1092 on Reader Card

MANUFACTURERS NEWS

Fine construction outlook buoys equipment makers

BUOYED BY A FINE OUTLOOK in the biggest rock market—construction—the equipment makers look for an improved 1959. Allis-Chalmers is "cautiously optimistic" because of the "still accelerating road program" and "the estimated 12 percent increase in total construction outlays in the coming year." As the year began the firm reported order backlogs down 15 percent from last year, but regarded the drop as "satisfactory under the conditions" because of the slower tempo in the durable goods industries during 1958. Sales of the big maker of electrical, farm and construction equipment dropped about one-half percent to $532 million last year.

White Motor Co. reports its combined backlog was about 50 percent higher than last year. The backog stood at $67 million as the year began. Though government sales will drop this year, "the continued improvement in commercial business should sustain our total sales" at about the 1958 level. The firm closed the year in the "strongest financial position in its history," registered a sharp 19 percent gain in sales last year. The sales total was $269 million.

Several manufacturers report higher orders early this year, among them Bucyrus-Erie Co. and Gardner-Denver Co. Gardner-Denver, maker of drilling machinery, looks for 1959 sales to equal the record $73 million of 1957.

Many equipment makers reported a drop in export sales, due to lack of dollars in other countries and lower equipment costs for foreign goods. Westinghouse Air Brake Co. noted that domestic sales last year about equaled 1957, but sharply lower export sales cut construction industry sales overall by 16 percent to $55.4 million. The firm's biggest division serving the construction and mining industries is LeTourneau-Westinghouse. Optimistic because of the road program, the division plans to introduce "a new line of off-the-highway trucks, a four-wheel prime mover and a four-wheel-drive tractor" this year to add to its heavy equipment line.

Airlift brings dealers to show of 1959 MF line

IN WHAT THE FIRM TERMED "history's largest one-day civilian airlift," Massey-Ferguson's industrial and agricultural dealers and company officials came in 200 chartered airline and private planes to Detroit in February. They came to view the firm's 1959 line of farm and industrial tractors and equipment. One model unveiled was the Work Bull 1001, a one-cu. yd. tractor shovel with larger, more streamlined profile, more convenient cockpit with weather-protected controls and optional cab, plus increased capacity.

Designed, like all MF industrial equipment, for a variety of jobs, the 1001 can be converted to seven other machines, including street sweeper and fork lift.

The big Canadian equipment maker (1958 sales: $440 million) has expanded into the U. S. with manufacturing plants at Detroit and Wichita, Kan. Building program last year tripled capacity of the Detroit tractor plant.

Cummins Diesel forms foreign sales unit

CUMMINS ENGINE CO., INC., Columbus, Ind., announced it has formed a subsidiary to promote foreign sales for its diesel engines. The new subsidiary, Cummins Diesel International, Ltd., will be headquartered at Nassau in the Bahama Islands.

The firm will soon open sales offices in Europe and South America, and studies are being made to find if additional manufacturing plants should be opened overseas. Cummins now operates in Shotts, England, through its wholly-owned subsidiary, Cummins Engine Limited. The parent firm has 180 sales and service locations outside the U. S. and Canada. A substantial portion of sales are made overseas, the firm said.

L. E. Carr, for many years manager of Cummins export distribution, has been named resident manager of the new company in Nassau.

International announces new truck line

OPPORTUNITY—THAT'S THE WORD International Harvester Co. uses to describe its 1959 outlook, now that its new B-line of light duty and selected heavy-duty models is available. IH kicked off the announcement of new models at a press party and show in Chicago on April 2.

New IH model BCF-174 is a 6-wheeler with 30,000 GVW, 6-cyl. or V8 engine

The new B-line, ranging in GVW from 4,200 to 33,000 lb., includes models offering advanced styling and engineering improvements. It adds to the company's full truck line, which has models ranging from 3,800 to 100,000 GVW. B-line trucks are available in four, six and all-wheel-drive chassis, with 6-cyl. or V8 engines. A wide choice of conventional and compact-design models is available. Cab seats are five feet wide for comfort.

Power plants available for the B-line include 36 high-torque engines. These are 4-cyl. gasoline, 6-cyl. gasoline and LPG, V-8 gasoline and LPG, and diesel engines. Horsepower ratings range from 51 to 335.

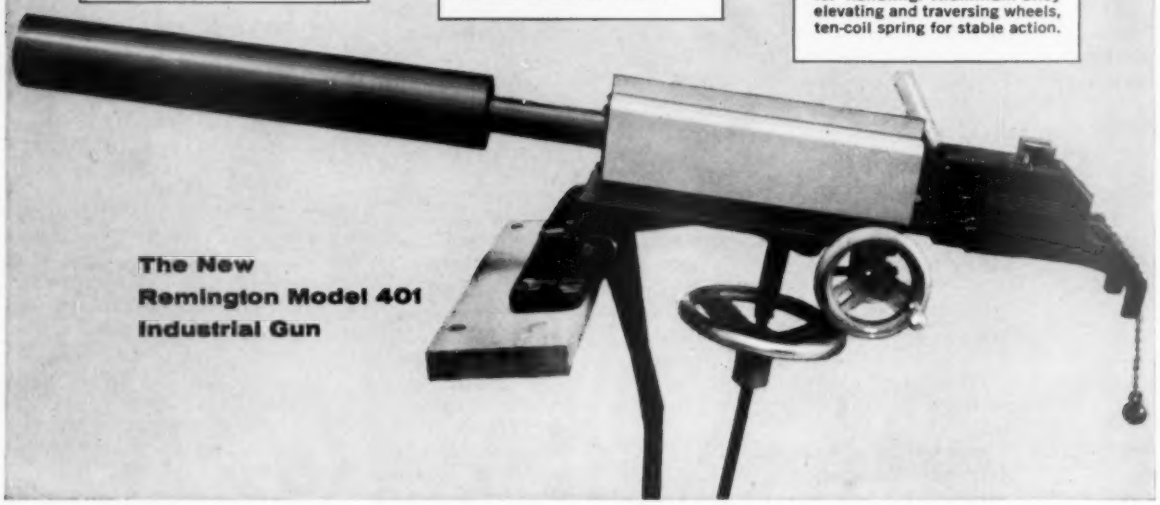
(Continued on page 222)

New— Remington Industrial Gun
offers you these operating advantages—

NEW Built-In Muffler... reduces firing noise up to 50%. Strong, one-piece welded construction. Removable.

NEW Stellite-Lined Barrel... gives constant energy to slug, improves ejection, and gives longer barrel life. Breech design permits full-barrel sighting.

NEW Lighter Construction and Recoil Action... makes for easier handling. Aluminum-alloy elevating and traversing wheels, ten-coil spring for stable action.



The New Remington Model 401 Industrial Gun

Remove clinker rings in minutes ... save time and money!

You save valuable kiln downtime and man-hours in removing clinker rings with the new hard-hitting Remington Model 401 Industrial Gun. It's designed for use in rotary kilns for cement and lime manufacture, refractories and lime-sludge operations. This newly designed gun does the work of many sledge hammers—brings rings and other troublesome kiln formations down in minutes!

No need to wait until the kiln cools off. In fact, there's no need to turn off flame or stop rotation until ready to fire. To operate, just load—aim—FIRE—and up to 9,000 ft.-lbs. of knockdown power smashes into the clinker buildup. A few well-placed shots, and rotation of the kiln will cause the ring to crumble. Then you're back on a full-time schedule!

Here's the easy, cost-saving way to remove buildups in clinker rings—without damage to kiln or lining. The new Remington Industrial Gun and one man can save you money.

For information about the advantages of this new gun and how it will help solve your problems, write to the address below.

ONE-MAN OPERATION is made more practical by the special construction of the new Remington Industrial Gun. Spade grip and special corrugated operating handle reduce strain for the operator. Safety features include provision for a protective shield which can be fitted to kiln opening to block heat and clinker fragments. Mortised breech block makes it impossible to fire when breech is not fully closed.

3 REMINGTON INDUSTRIAL SHELLS
for variety of power...

Magnum Shell—3-oz. special lead-alloy slug —delivers 9,000 ft.-lbs. of energy.

Standard Shell—3-oz. lead slug—delivers 7,500 ft.-lbs. of energy for shorter kilns.

Special Shell—2-oz. special zinc-alloy slug —delivers 7,500 ft.-lbs. of energy.

All shells now available in new easier-to-handle packing

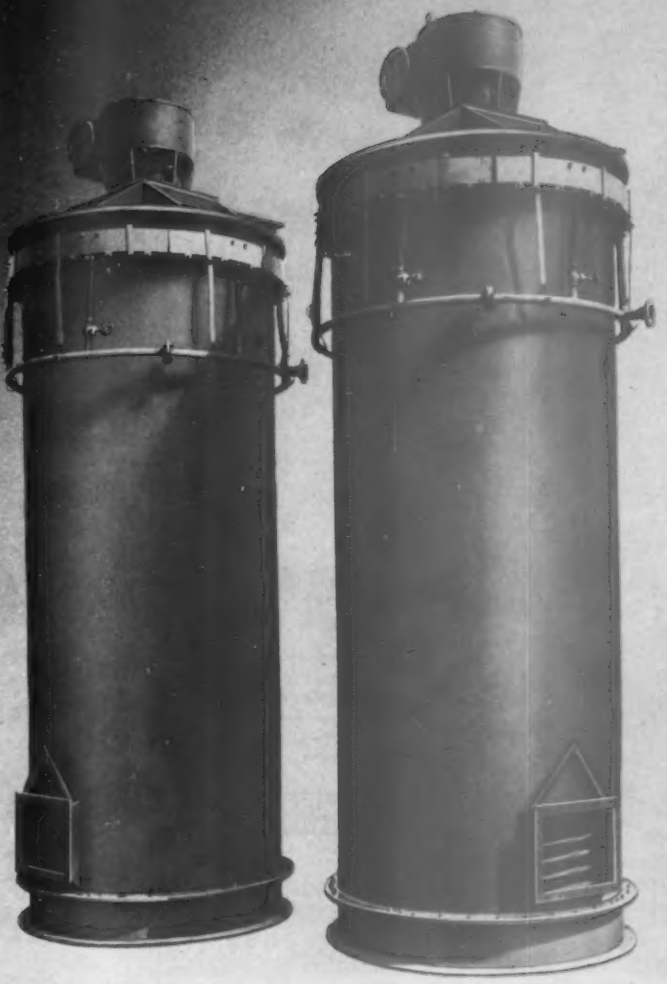
Enter 1061 on Reader Card

Remington DUPONT

Remington Arms Company, Inc., Bridgeport 2, Connecticut

SMIDTH

cement coolers



The Smidth Cement Cooler, developed especially for cooling hot cement to temperatures acceptable for bulk shipment or immediate bagging, is externally water-cooled. The hot cement is introduced at the base and conveyed in a thin layer along the cooled interior surface to the top, where it is discharged. High cooling efficiency is assured by the intimate contact of cement and the water-cooled surface.

The Smidth Cooler may also be used with many other similar dry pulverized materials.

Illustrated here are two 6' 6" dia. x 17' 7" high Smidth Coolers ready for shipment.

F. L. Smidth & Co.
Engineers and Machinery Manufacturers
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India

Enter 1062 on Reader Card

MANUFACTURERS NEWS

(Continued from page 219)

Roberts, Blessing named at Research-Cottrell

LAWRENCE M. ROBERTS has been named senior vice president by Research-Cottrell, Inc., Bound Brook, N.J. In addition to his new job, Mr. Roberts retains his duties as director of research and engineering and as a director of the maker of industrial gas cleaning equipment.

William H. Blessing has been named New York District sales manager, a position which includes supervision of sales in metropolitan New York, New England and the southeastern states. He had been San Francisco district sales manager since 1954.

The firm also named Richard H. Betchley as San Francisco sales manager, a post which puts him in charge of sales in 10 Western states. He was a salesman in the district.

Smart appointed manager

JOHN STUART SMART, JR., has been appointed general sales manager of American Smelting and Refining Co., New York, N.Y. Mr. Smart will be responsible for the administration of the sales department and for the sales of the company's major metal products and by-products of primary metal smelting and refining. He joined Asarco in 1936 as metallurgist.

Also at Asarco, Ralph L. Wilcox has been named assistant sales manager. Mr. Wilcox has been with the company since 1952, and has had wide experience in the non-ferrous metals field.

Universal Engineering shows 1959 equipment

MORE THAN 200 DISTRIBUTOR representatives and guests heard talks and looked over Universal Engineering's new equipment models in January prior to the AED convention in Chicago. Meeting at the plant of the firm's parent organization, the Pettibone Mulliken Corp., Universal distributors saw $200,000 worth of equipment, including the all roller-bearing cone crusher; a 36-in. short-head unit; a 3645 portable Impact Master crusher; a new 4136 Hammer Master; and a horizontal Screen Master with phasing bars and air springs.

H. J. Knudten, president of Universal, told the group that his firm had record sales last year despite a slow start. Pettibone Mulliken President E. J. Seifert said entirely new and exclusive products not made a few years ago account for a substantial portion of Universal's sales. Prospects are very good for this year, he added.

Robison named president of Wheel Trueing Tool

H. E. ROBISON is new president and treasurer of Wheel Trueing Tool Co., Detroit. He succeeds H. B. Wallace, founder and president of the firm since its inception in 1910, who becomes board chairman. R. S. Fowler, formerly a vice president, becomes vice chairman of the board.

Re-elected vice presidents are Donald J. Wallace, manufacturing, and Harry W. Wallace, diamond drilling division.

Mr. Robison has been with the firm since 1919 and treasurer since 1932. Wheel Trueing Tool pioneered the development and manufacture of diamond tools in the Midwest and is now largest maker of diamond tools in the Western Hemisphere. Developments of the firm include the use of small, less expensive industrial diamonds in mining bits and diamond bits for drilling through reinforced concrete.

(Continued on page 224)

PLATEGRIP
PLATE FASTENERS FOR CONVEYOR BELTS

Make strong dust-tight, water-tight joints in belts of any width. Special design spreads tension uniformly across belt, allow natural troughing of belt and assures smooth operation over flat, crowned or take-up pulleys. Sizes for belts of from ¼" to 1½" thickness. *Write for Catalog Sheet.*

ARMSTRONG BRAY & CO.
5386 Northwest Highway, CHICAGO 30, U. S. A.

Enter 1085 on Reader Card

CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills and accessory equipment maintained at all times

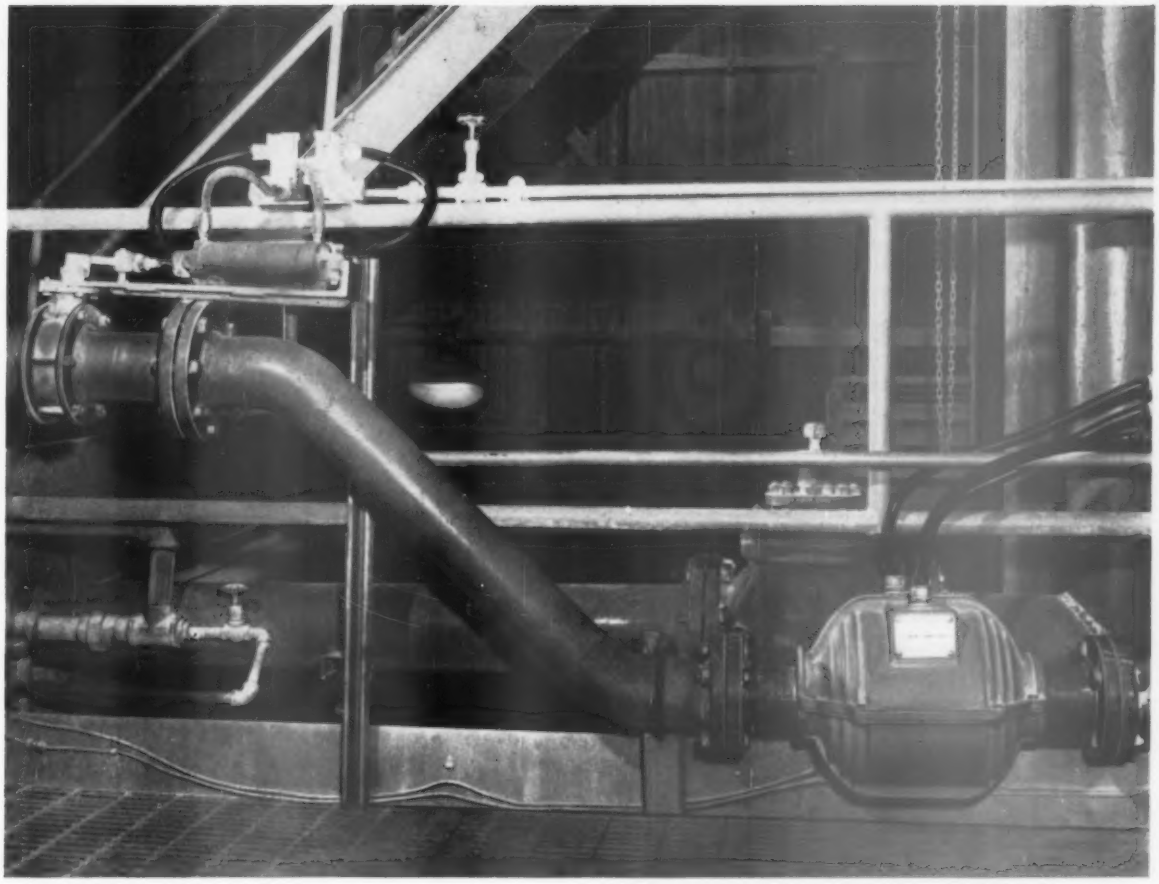
Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

Enter 1086 on Reader Card

ROCK PRODUCTS

HAS THE LARGEST ABC CIRCULATION AND HIGHEST RENEWAL PERCENTAGE IN THE NON-METALLIC MINERALS INDUSTRY



Missouri Portland Cement Company automatically measures and controls additions of shale slurry to kiln feed with this 3" Foxboro Magnetic Flow Meter. Since installation in 1956, only minor servicing and inspection have been required to insure continuing accuracy.

Shale slurry metered simply... automatically

with Foxboro Magnetic Flow Meter

Operator sets amount of shale slurry to be added, then pushes "start" button. Foxboro Dynalog Recorder (at left) records and totalizes flow passing through Magnetic Meter. When desired amount of shale has been added, control valve closes — automatically.

"We used to ratio shale slurry by manually operating a pinch valve and spot checking the flow rate," reports Missouri Portland Cement Company, St. Louis, Mo. "It was inaccurate and time-consuming."

"Now our Foxboro Magnetic Flow Meter does it automatically. And, after a 30-day continuous check of volumes, we found its accuracy to be ±0.2% — assuring us that our rigid requirements for kiln feed batches would be met."

Foxboro Magnetic Flow Meters are ideal for measuring industry's most difficult fluids. Installed as simply as a length of pipe, they have no pressure taps to plug up... no orifice plates to clean... no line restrictions of any type. Instead, electrodes, flush-mounted in the meter wall, sense the flow rate and transmit it to a remote Dynalog* Electronic Recorder. Measurement is linear and continuous.

There are literally *hundreds* of Magnetic Flow Meters in operation today—metering almost every type of liquid except hydrocarbons. Get full details by writing for Bulletin 20-14C. **The Foxboro Company, 835 Neponset Ave., Foxboro, Mass.**

Reg. U. S. Pat. Off.

FOXBORO

REG. U.S. PAT. OFF.

MAGNETIC FLOW METERS

Enter 1103 on Reader Card

MANUFACTURERS NEWS

(Continued from page 222)

Bucyrus-Erie appoints Thiel, Haney and Shaw

BUCYRUS-ERIE CO., South Milwaukee, Wis., has appointed three new sales administrators. They are Paul J. Thiel, sales administration supervisor, Byron A. Haney, product development manager and Frederick B. Shaw, sales development manager.

Mr. Thiel, with the firm 10 years, was a sales representative in the company's New York office. Since joining the firm in 1929, Mr. Haney has held several sales posts, his latest being Northwestern sales manager. Mr. Shaw joined the firm in 1956 as a sales representative, was with the Chicago office when appointed to his new post.

Massey-Ferguson gets British diesel maker

MASSEY-FERGUSON, Toronto, Canada, has purchased control of an important British diesel-engine maker, F. Perkins, Ltd., Peterborough, England. Noting that "there is an increasing trend in North America toward diesel-powered farm and industrial machinery," MF feels the move greatly increases its strength and integration. The firm noted that diesels use less expensive fuel and perform better in high altitudes than gasoline powered units. Perkins had 1958 profits of about $1 million and employs about 5,000 persons.

Conveyor belt industry hit by price-fix charge

A FEDERAL GRAND JURY has handed down an indictment charging price fixing in the conveyor belting industry, the *Wall Street Journal* reports. But B. F. Goodrich Co. and Goodyear Tire & Rubber Co. indicated, in reply, that they feel there is "severe competition and lack of price uniformity." Goodyear noted that prices have remained "at relatively low levels since World War II" because of continuing effort to improve manufacturing efficiency, a "characteristic of an intensely competitive industry."

Golson tells AIME about aggregate-making problems

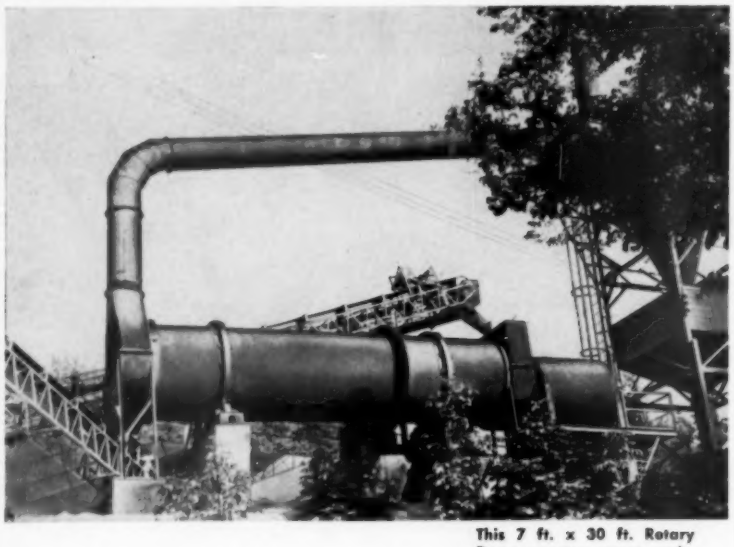
CHARLES E. GOLSON, sales development manager of aggregates beneficiation for Western Machinery Co., described to AIME members at their recent convention some of the problems of preparing high quality concrete aggregates. He evaluated and described the many modern techniques used in making fines usable in strict-specification concrete. About 3,000 mining, metallurgical and petroleum engineers attended the San Francisco meeting in February.

Koehring excavators being made in Spain

KYNOS, S. A., Madrid, Spain, is making Koehring's ¾-cu. yd. excavator and Kwik-Mix and C. S. Johnson products at its new plant in Madrid. The Spanish firm is producing the units under an agreement to distribute them in the Spanish market, including that country's African possessions. The 80,000-sq. ft. plants will employ 300 people.

Koehring, which is examining the European Common Market set-up, has agreements with firms in Japan and England to make and market its products in the Far East and the Sterling area, respectively.

(Continued on page 226)



This 7 ft. x 30 ft. Rotary Dryer removes excess moisture. Dryer is oil heated.

DRYERS · COOLERS · KILNS

Over 60 years of experience and a thorough knowledge of raw materials and their properties have resulted in McDermott's ability to design and build for you the most efficient equipment for your specific needs. You'll save money on initial installation costs . . . and, more important, on maintenance costs.

WRITE FOR FREE BROCHURE

12 pages of diagrams, descriptions and on-the-job photographs to illustrate the scope of our work.

McDermott

BROTHERS CO., INC.

ALLENTOWN, PENNA.

phone HEmlock 3-3231

Enter 1047 on Reader Card

Enter 1122 on Reader Card

another Olin Mathieson packaging idea!

SKID-MASTER

Tough kraft multiwalls...with a non-skid finish you can't see or feel!

Don't sacrifice strength, good looks, or printability for skid-proofing! Skid-Master multiwall bags provide protection against sliding damage with an "invisible" non-skid finish built right into the paper itself! No sticky coatings, tacky sprays, or surface grit... just clean, tough, non-skid kraft! Call or wire Olin Mathieson today: Packaging Division, W. Monroe, La.

OLIN MATHIESON PACKAGING DIVISION

FROSTKRAFT IS A TRADEMARK

MANUFACTURERS NEWS

(Continued from page 224)

Hallock joins Gannett Fleming engineering firm

HOUGHTON R. HALLOCK has joined the consulting engineering firm of Gannett Fleming Corddry and Carpenter, Inc., in Harrisburg, Pa., as director of the general engineering division. He recently resigned from his position of executive vice president of the Texas Atomic Energy Research Foundation. He previously was a colonel with the Army Engineers.

Joy makes German crusher

JOY MANUFACTURING CO., Pittsburgh, Pa., has been licensed to sell the Hazemag impact crusher, developed by the Hazemag Co. of West Germany. M. Bruce Mairs has been appointed product manager for the U. S. manufacturer of the equipment.

The unit is expected to find wide application in the rock products industry where one-pass secondary reduction is needed which gives a minimum of screenings. In the crusher a fast-turning rotor equipped with blow bars impacts against the feed. Feed is thrown against gravity-hung impact plates suspended pendulum fashion inside the crushing chamber. Material is crushed to the size desired by adjusting impact plates and rotor speed.

Strike hits 15,000 at Allis-Chalmers

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., and the United Auto Workers union were unable to agree on whether the firm's plants should all be covered by a master contract or by separate contracts for each. As a result, principally for this reason, more than 15,000 UAW members walked off the job early in February. The firm was the only construction machinery and farm implement maker which had not reached a new agreement with the union.

Russell is Hardinge executive vice president

ROBERT J. RUSSELL has been appointed executive vice president of Hardinge Co., Inc., York, Pa. He was elected vice president for sales in 1953 and subsequently assumed the additional duties of treasurer, a post he still retains. With the firm since 1929, Mr. Russell has authored chapters on grinding or drying in several technical handbooks.

Allis-Chalmers acquires hydraulics firm

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis., acquired the S. Morgan Smith Co., York, Pa., following approval of Smith's stockholders. Acquired January 28, The York Works of Allis-Chalmers becomes that firm's 20th plant.

The maker of hydraulic turbines and pumps was purchased through the exchange of 1.1 shares of AC common stock for each share of S. Morgan Smith capital stock outstanding.

A new hydraulic division in AC's Industries Group has been formed, with headquarters in York. Beauchamp E. Smith, president of Smith, has been named general manager of the new division. Burwell B. Smith becomes assistant general manager for sales; he has been Smith's vice president in charge of sales and engineering. William J. Rheingans, who has been manager of the hydraulic department at the West Allis, Wis., works of AC, will move to York to become assistant general manager of engineering.

END

Specify MANITOWOC Agitators

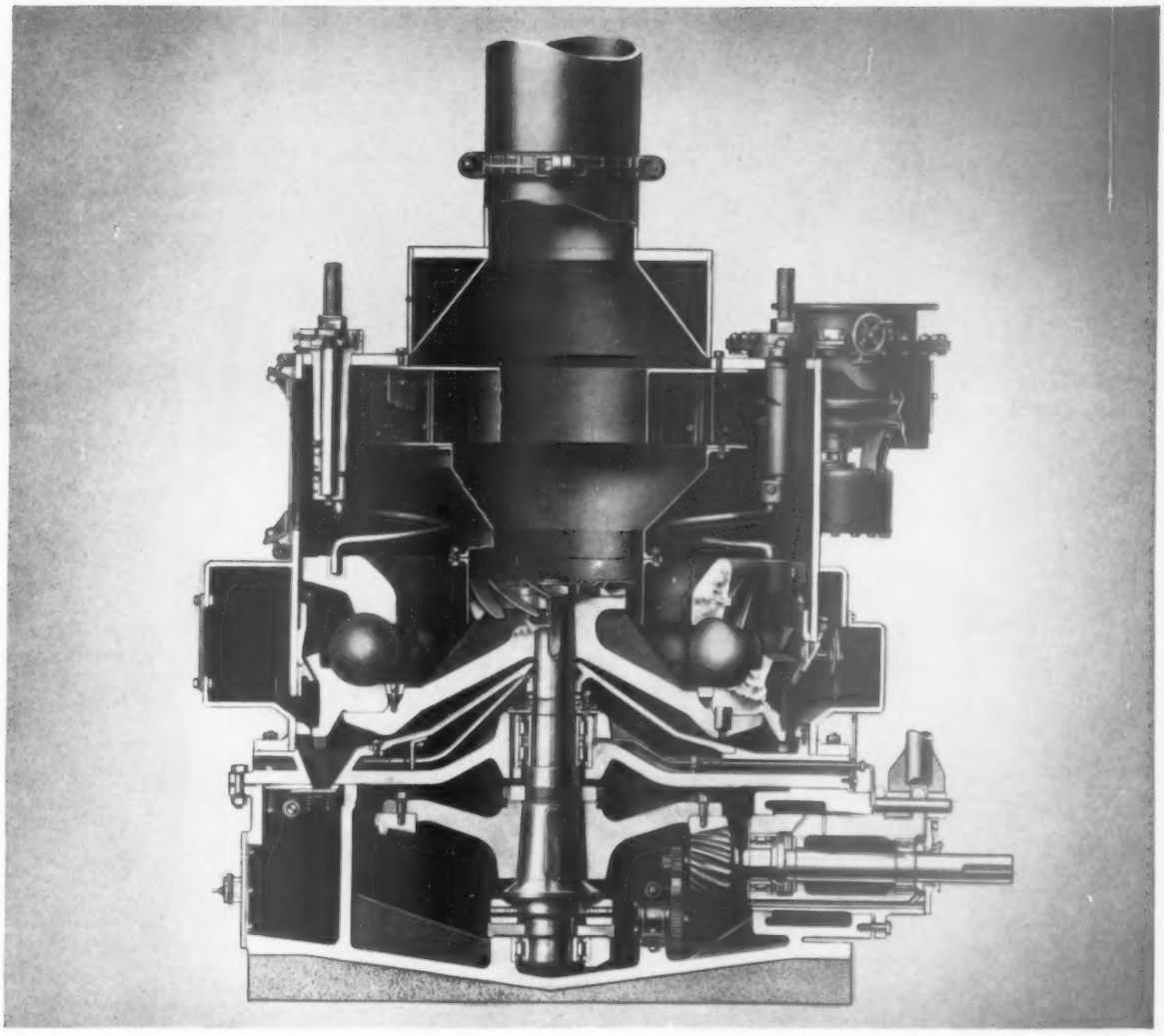
Thorough Agitation
with minimum power
and air consumption

Look at the Manitowoc Agitator above, installed in a clay slurry tank 30 ft. in diameter and 25 ft. high. This is but one of dozens of Manitowoc Agitators found in the foremost cement producing plants, both in this country and overseas. These quality conscious operators depend on Manitowoc for complete, uniform and economical slurry agitation . . . *plus* design which permits the installation of agitators in tanks up to 100 ft. in diameter, or larger.

By combining mechanical and air agitation, Manitowoc Agitators maintain consistently uniform particle size and chemical analysis in any type of slurry *without* a continuous application of air. As a result, compressed air consumption and operating costs are substantially reduced. Combine this cost-saving feature with the exclusive Manitowoc Control Valve, scientific air pipe design with an improved check valve, and rugged, channel construction agitator arms and you have the finest slurry agitator for turning out highest quality cement at *your* plant. Write now for detailed, helpful information.

Manitowoc Shipbuilding, Inc.
MANITOWOC, WISCONSIN

Enter 1048 on Reader Card



Low pulverizer maintenance assures long continuous operation in direct kiln firing

B&W Pulverizers for the direct firing of rotary kilns are engineered and built to give long, uninterrupted service with minimum maintenance. The pulverizer is compact, self-contained, and fully enclosed. Grinding elements are made of long-life, special wear-resistant metals, and there are no bearings or parts in the grinding zone to be lubricated. The helical reduction drive with anti-friction bearings is isolated completely from the dust and high temperatures of the grinding zone. Lubrication is automatic. The result—less wear and tear on vital operating parts—and less maintenance.

No dismantling of pulverizer or piping is necessary during scheduled shut-downs to replace grinding elements. Large, quick-opening access doors in the pulverizer housing permit speedy inspection and removal of parts.

These B&W design and maintenance features, backed by years of satisfactory performance, assure continuous, trouble-free service in modern kiln operation. Write for additional information to the Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

C-219

B&W

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

Enter 1102 on Reader Card

"When all media is competing for a readers time and attention . . ."

by Edward F. Ritz
Media Director
Klau • Van Pietersom • Dunlap, Inc.
Milwaukee, Wisconsin

KLAU · VAN PIETERSOM · DUNLAP, INC.
Advertising · Public Relations
COMMERCE BUILDING · MILWAUKEE 3, WISCONSIN

October 8, 1958

Mr. Philip D. Allen, President
ROCK PRODUCTS
79 West Monroe Street
Chicago 3, Illinois

Dear Phil:

I have been observing with a great deal of interest the amazing evolution taking place in ROCK PRODUCTS. The skillful use of photographs and captions, headline treatment, typography and concise writing have brought about a stimulating and exciting format which unfortunately is so often lacking in today's trade press.

It is a wise publisher who is trying to give his readers not only the best editorial material, but to present it in such a fashion that it is easy and interesting to read. This is of extreme importance today when all media is competing for a reader's time and attention.

That this formula is paying off for ROCK PRODUCTS is certainly indicated by its increased advertising. Though it is a small gain, it does have a great deal of significance. The important thing is that ROCK PRODUCTS has more then held its own in the face of an overall drop in trade paper advertising.

Congratulations to you and your organization for an outstanding job in bringing a publication, which at one time was in second position, to a forerunner spot in your industry. Aggressive, skillful and imaginative competition is healthy and the life blood of any publishing venture.

Kindest regards,

Edward F. Ritz
Media Director

the industry's recognized authority

sa
ROCK PRODUCTS
A MACLEAN-HUNTER PUBLICATION
79 W. MONROE ST. • CHICAGO 3, ILL.
Also publishers of CONCRETE PRODUCTS, the new producer magazine

WESTERN PRECIPITATION'S

NEW

THERM-O-FLEX COLLECTOR

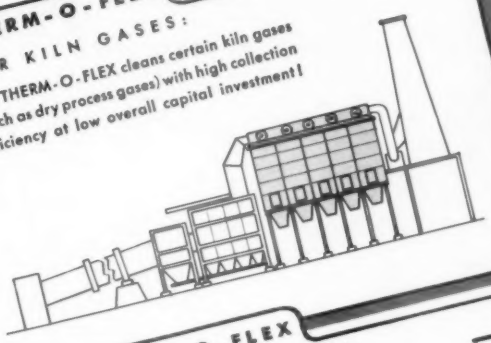
CLEANS GASES TO 550°F

with VIRTUALLY 100% COLLECTION!

THERM-O-FLEX

FOR KILN GASES:

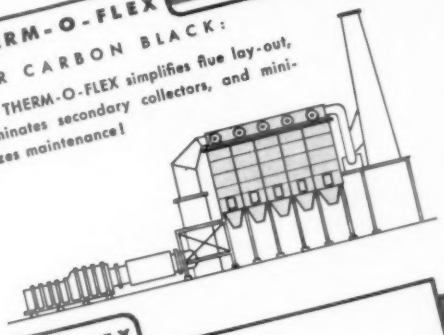
The THERM-O-FLEX cleans certain kiln gases (such as dry process gases) with high collection efficiency at low overall capital investment!



THERM-O-FLEX

FOR CARBON BLACK:

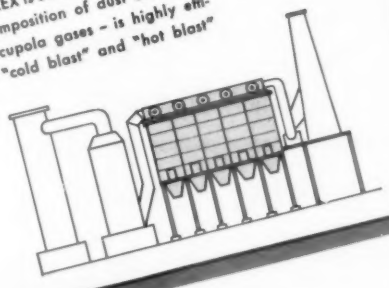
The THERM-O-FLEX simplifies flue lay-out, eliminates secondary collectors, and minimizes maintenance!



THERM-O-FLEX

FOR CUPOLA GASES:

The THERM-O-FLEX is unaffected by the varying chemical composition of dust and fume particles from cupola gases – is highly efficient on both "cold blast" and "hot blast" processes!



Western-Precipitation brings another important new advancement to the gas cleaning field — the THERM-O-FLEX Collector — a filter type of unit with many advantages over conventional filter equipment...

▶ The THERM-O-FLEX features glass silicone treated filter tubes that efficiently handle gases as hot as 550° F!

▶ The THERM-O-FLEX tubes are cleaned *automatically* by intermittent collapsing (not by destructive shaking). This assures uniformly low pressure drop combined with long filter life!

▶ The THERM-O-FLEX has *no moving parts* — nothing to require frequent servicing or replacement!

RESULT —
highest collection efficiency combined with lower cost, less maintenance and uniformly low pressure drop on a wide range of applications, a few of which are shown at left.

Let Our Experienced Engineers study your dust or fume collection problem — *large or small* — and show exactly how **THERM-O-FLEX** gives new standards of performance at low installation costs. No obligation, of course!

HELPFUL NEW BULLETIN
describes multiple Therm-O-Flex savings, outlines applications, technical data. *Ask for Bulletin #F105!*

WESTERN

PRECIPITATION

CORPORATION

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

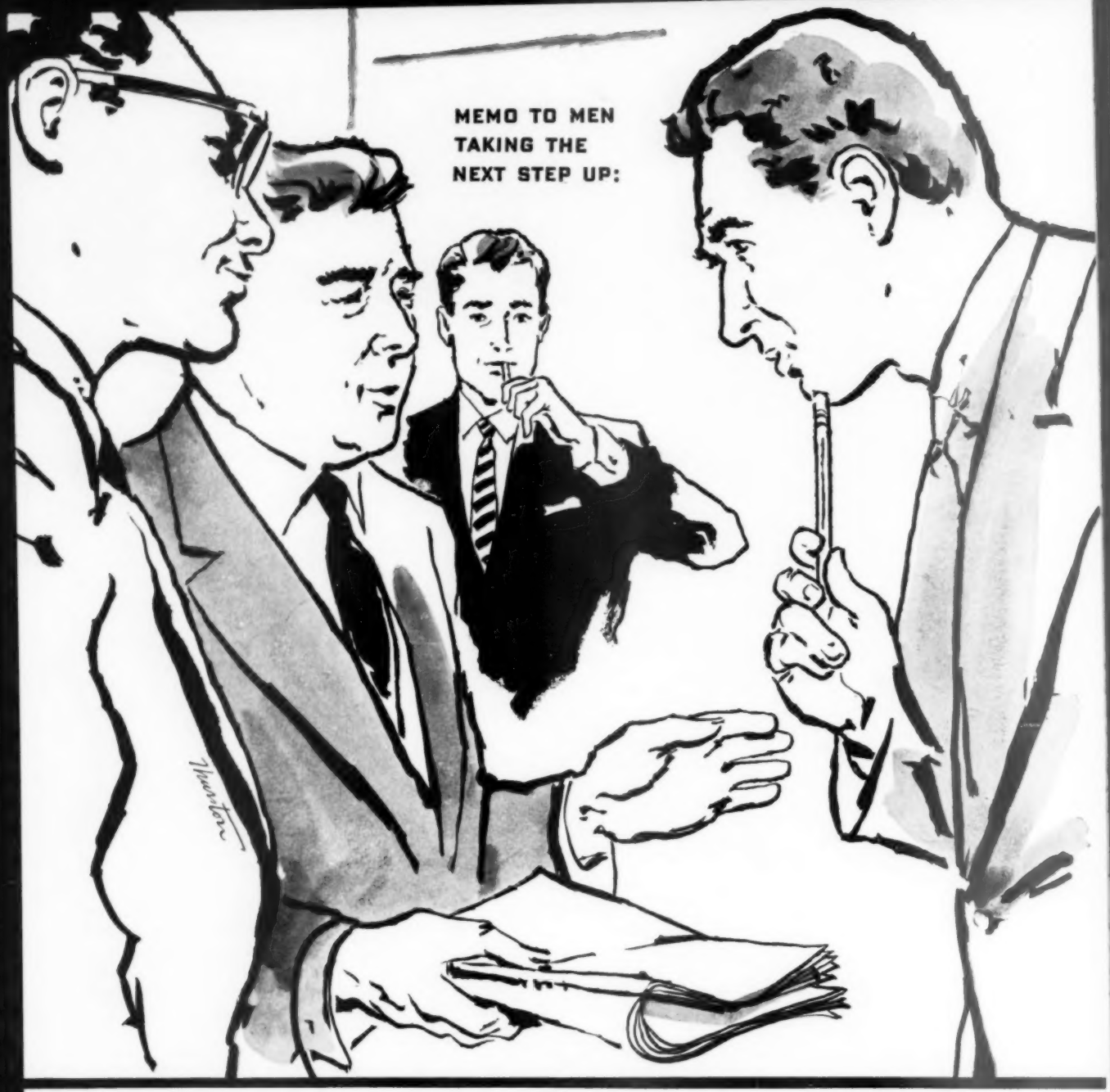
LOS ANGELES 54 • NEW YORK 17 • CHICAGO 2 • PITTSBURGH 22 • ATLANTA 5 • SAN FRANCISCO 4

Representatives in all principal cities

Precipitation Company of Canada Ltd., 8285 Mountain Sights Avenue, Montreal 9

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Jet-Cleaned Filters
THERM-O-FLEX Hi-Temp Filters
TURBULAIRE-DOYLE Scrubbers
HOLO-FLITE Processors
HI-TURBIANT Heaters

Enter 1119 on Reader Card



WHERE THERE'S BUSINESS ACTION THERE'S A BUSINESSPAPER

Inside information—when it's genuine—is invaluable when it comes to picking a winner. It's also invaluable when it comes to doing a better job in business.

Men on top and men on the way up in business know this. They're constantly on the alert for information—complete information, sound information, timely information. They get that information most consistently by habitual reading of the businesspaper they subscribe to in their particular field.

They read for profit, not pleasure. They read carefully, thoroughly—looking not only for information, but for fresh ideas, new methods, new products they can put to work. And they find so much that's worthwhile in the advertising that they read it with the same searching concentration they devote to the editorial pages.

You can profit by emulating the reading habits of key men at every level. Subscribe to your businesspaper. Read every issue. Carefully. Thoroughly. Searchingly.

Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

MACLEAN-HUNTER PUBLISHING CORPORATION

79 West Monroe Street Chicago 3, Illinois

One of a series of advertisements prepared by THE ASSOCIATED BUSINESS PUBLICATIONS

WHERE TO BUY

Rock Products Classified Advertising

— Where to Buy —

Forms close 12th of Month Preceding Publication

Mail to: **ROCK PRODUCTS,** Where To Buy Dept., 79 West Monroe St., Chicago 3, Illinois

DATE _____

ADVERTISER _____

BY _____

ADDRESS _____

CITY, ZONE & STATE _____

Remittance Enclosed
Terms: 10 days after receipt of invoice

RATES FOR ONE INSERTION

Column Inches Used	Rate Per Column Inch
1- 3	$9.00
4- 8	8.60
9-14	8.40
15-19	8.20
20-30	7.80

Lower rates on a contract basis. Write for rate card.

ATTACHED COPY to appear in issue(s) checked

Jan. . . . . July . . . . .
Feb. . . . . Aug. . . . .
Mar. . . . . Sept. . . . .
Apr. . . . . Oct. . . . . .
May . . . . . Nov. . . . .
June . . . . . Dec. . . . . .

BLIND ADVERTISEMENTS

Box Numbers will be assigned to ads without extra charge, if the advertiser desires.

Inquiries should be sent to the Box Number c/o Rock Products, 79 W. Monroe St., Chicago 3, Ill. They are forwarded daily to the advertiser. Rock Products cannot disclose advertisers' name or answer inquiries.

BELT CONVEYORS

400' long, 30" wide, troughing idlers, cat walk, with 25 HP motor drive.
275' long, 30" wide, troughing idlers, 25 HP drive

GYRATORY CRUSHER

Allis Chalmers 8-K Gates Type
Spare Shaft and mantle.

ROLL CRUSHERS

54 x 24 Traylor Type "AA"
30 x 16 Traylor Type A
36 x 16 Superior double drive

BINS

16' diameter x 14' high (5/8" riveted steel) flat bottoms w/understructure

PUMPS

2500 gpm DeLaval	(2)	55' head
2100 gpm DeLaval	(1)	40' head
1100 gpm DeLaval	(2)	16' head
1000 gpm DeLaval	(2)	75' head
750 gpm LeCourtney	(1)	470' head
500 gpm Union	(1)	254' head
500 gum DeLaval	(1)	100' head
425 gpm DeLaval	(1)	55' head
200 gum Dean Hill	(2)	270' head
200 gpm Barrat	(1)	205' head
175 gpm Twin Volute	(1)	400' head

L. J. LAND, INC.

P.O. Box 689, Weehawken, N.J. UNion 4-1010 — New York City CANAL 6-6976 — P.O. Box 756 Reading, Pa. Franklin 5-8474

PAN CONVEYORS 30" x 33' centers 18" pitch, 36" x 54' centers 12" pitch.
FEEDERS—24" x 18' centers Pan Feeder with motor reducer. Jeffrey apron feeder 21" x 10'6" centers.
GRIZZLY ROLLS—steel frame contains 7 live rolls 12" dia. x 36' long.
ELEVATOR—90' open inclined with 15" x 14" buckets on 2 strands of chain.
PUG MILL—Chambers 30" x 14'7".
SCREEN—Rotex Sifter Model 421—5' x 7'
SEPARATOR—Magnetic Dings for granular materials—1 main belt, 3 cross belts.
SHOVELS—L-57 Lorain 1¼ yd. with Cat diesel engine—75-B Lorain 1¼ yd. with Cummins diesel engine.

G. & W. H. CORSON, INC.
Plymouth Meeting, Pa.

CRUSHERS—PULVERIZERS

CONE, Symons 3', Portable
GYRATORY, Kennedy, 49, 12½", 100 HP
JAW, 18" x 9", Mitchell 25 HP
JAW, 20" x 6" Bacon, 30 HP
JAW—36" x 15" Bacon 75 HP
BABCOCK & WILCOX Type E32, 75 HP
RAYMOND, 6 Roll, Low Side, 200 HP
HAMMERMILLS, PENNS. C3-30, 60 HP
HAMMERMILL, PENNA. CRUSHER #5060, Series #DNC, 400 HP, non-clog, 1952—UNUSED.
ROBINSON 36" Saw-tooth, 15 HP

DRYERS & KILNS

11' x 155' Traylor Kiln, ¾", Shell.
9' x 100' Kiln, Vulcan
8' x 170' kilns, ¾" shell
8' x 125' Vulcan Kiln, ¾" shell
8' x 115' Long—½" shell, 2 tires.
8' x 50' Traylor Kiln 5/8" shell
7'6" x 100' Kiln, ½" shell
7'6" x 60" Kiln ½" shell
6' x 60' Vulcan Kiln, 5/8" shell
8' dia. x 70' L, Ruggles Coles, Double. Shell,
7' x 50' Allis, Double shell dryer, ½"
6' x 50', Louisville dryer
5'6" x 50', Renneburg, shell. Dryer 3/8"
5'6" x 30', 3/8" Shell. Dryer
4'8" x 33', 3/8" Shell. Dryer
4' x 24' L, brick lined kiln.

MILLS

CONICAL BALL, Hardinge 6' x 36", 75 HP
CONICAL BALL, Hardinge 4'6" x 16", 25 HP
COMPEB, Allis Ch., 7' x 24', 450 HP
BALL-TUBE, Allis 5' x 22', 150 HP
BALL, Scrubber, Hardinge 8' x 48"
ROD, Denver 4' x 10', 60 HP (New Gears)
ROD, Kennedy 4' x 8', 50 HP
Ball, Allis 6' x 15', 150 HP
BALL, Marcy No. 64½, 125 HP
ROD, Marcy 7' x 15', 300 HP (4" liners)

MISCELLANEOUS

BRIQUETTING PRESSES, Komarek Greaves, 75 HP, 50 HP, 10 HP
PUG MILLS, 25, 50, 150 HP
STEEL BINS—up to 200 tons storage, all welded construction
5000'—All steel through belt conveyor, 16" & 24" rubber belts
ALSO—Steel Trough—Belt Conveyors, Bucket Elevators, Steel Screw & Flight Conveyor, etc.

PERRY EQUIPMENT CORPORATION
1418 N. Sixth St. Phila. 22, Pa.
POplar 3-3505

TITANIUM PLANT

1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, 7/8" shell.
Steel building housing above kiln 32' x 202' x 40.

1—Vulcan 8' x 125' Rotary Kiln, 2 tires, ¾" shell.

2—Vulcan 8' x 50' Rotary Kilns, 2 tires, welded, 7/8" shell.

2—Vulcan 6' x 60' Rotary Kilns, 2 tires, ¾" shell.

2—Abbe 5' x 16' Ball Mills.

4—Worthington, I. R., Compressors; 1000, 500 & 300 cfm.

2—Aurora 24" Vertical Centrifugal Pumps, 200 HP motors, 5000 gpm, 125' head.

1—Byron Jackson Deep Well Pump, 75 HP Vertical Motor.

6—Dorr Thickener Mechanisms, 16'.

18—Steel Buildings 20' to 80' wide x 60' to 140' long.

2—20 ton Overhead Cranes, 30' & 35' spans.

Bemis 50 lb. Bag Packer with Sewing Machine; Bucket Elevators 65' to 125' high; Redler Conveyors 5" and 10"; Screw Conveyors 6" and 9"; Motors, Reducers, Pumps, etc.

SEND FOR CIRCULAR

REPRESENTATIVE ON PREMISES

Your Inquiries Solicited—Send for Circulars

BRILL EQUIPMENT COMPANY
Broening Highway—Baltimore, Md.
Telephone: Medford 3-2911

QUARRY EQUIPMENT

Cedarapids 4A, 2340 Jaw Portable Primary.
Cedarapids 1236 Twin Jaw Crusher.
Cedarapids 6C, 1236 Twin Jaw Portable Secondary.
Cedarapids 3633 Hammermill rebuilt
Cedarapids 2033 Hammermill. Slightly Used.
Telsmith 36" Gyrasphere Crusher.
Williams No. 40 slugger type pulverizer
26" x 8'4" apron feeder with drive.
Robins 4' x 9' triple deck screen.
2 Cedarapids DDD units with 4' x 12' 2-deck screens on 8' x 8' 2-compartment bins, connecting conveyor.
Cedarapids 30-S, 3-compartment Charging Hopper, Apron Feeder, Bucket Elevator. New.
Smithco 16' x 16' single compartment bin.
Pioneer 4' x 8' double deck screen. Rebuilt.
27½ ton, single-compartment 8' x 12' bin.
1—Eagle 36" x 20' Double Log Washers. Good.
Wemco 24" x 13' Sand Preparation Machine.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two compartment, 13' x 23' bin
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor belting.

SHOVELS AND CRANES

P & H 855B-LC, 2-yd. diesel dragline.
P & H 655B 1½ yd. diesel dragline reconditioned.
Lorain L-79, 1½-yd. diesel shovel rebuilt.
Bucyrus-Erie 38B, 1½-yd. Diesel Dragline.
Lorain L-26, ¾-yd. Diesel Dragline. Excellent.
Lorain L-25A, ¾-yd. Gas Backhoe.
Lorain L-25K, ¾-yd. Gas Crane.
Koering 304, ¾-yd. Diesel Shovel-Backhoe.
P & H 255A, ¾-yd. Diesel Clam-Crane.
Lima 34 Paymaster ¾-yard diesel shovel. Good
Unit 1020 ¾-yard diesel powered shovel-crane
Unit 614, ½-yd. Diesel Backhoe.
Unit 614, ½-yd. Gas Backhoe.
American 100, ½-yd. Gas Clam-Backhoe.
Lorain TL-20, ½-yd. Diesel Backhoe.
Lorain MC-414 20-ton Moto-Crane reconditioned.
Link Belt HC-90 25-ton truck crane
Michigan TLDT-30, 30-ton Truck Crane
Lorain MC-4 15-ton Moto-Crane.
Lorain MC-110, 10-ton Gas Moto-Crane
Lorain SP-107, 7-ton self-propelled crane
1 Caterpillar 112 Diesel grader.

TRACTORS, TRUCKS, SCRAPERS, ETC.

2—Euclid 18-yd. overhung engine scrapers.
2—Euclid 12-yd. overhung engine scrapers.
1—Euclid 7-yd. overhung engine scraper.
1—Euclid 15½-yd. six wheel scrapers.
2—Euclid 13-yd. bottom dumps. Good.
2—Euclid TC-12 twin engine tractors.
1—Euclid 18FD, 15-ton rear dump.
1—Mack LRS 15-ton rear dump. Rebuilt
1—Pullman S-600, 6 to 8 yard scraper.
1—Caterpillar DW-10 hydraulic scraper.
1—International TD-14A tractor with PCU
1—International TD 18 with cable bulldozer
1—Euclid tractor with 3200 gallon water tank
1—Cat. D-7 with Hydraulic Angledozer Blade.
1—Cat. D-6 with hydraulic angledozer blade.
1—Caterpillar D-4 Tractor only
1—Internat'l. 300 tractor, with loader backhoe.
1—Allis-Chalmers HD-19 with cable bulldozer
1—LaPlante choate 13½-yd. Cable scraper
1—Atco H85, 10½-yd. Hydraulic scraper
1—Hough Hr, 1-yd. Gas Front End Loader.

SHOVEL ATTACHMENTS

Lorain 82 or 820, 2-yd. 23' boom, 30' stick
Lorain 50, 1-yd., 21' boom, 17' stick
Lorain 30A, ½-yd., 16' boom, 13'4" stick.
Osgood 903, 2-yd., 24' boom, 20'6" stick.

BACKHOE ATTACHMENTS

Lorain 30 or 40, 16' Boom, 7' Stick, 44" Bucket.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 RPM. Rebuilt
Cat. D13000, 138 H.P. at 1000 RPM. Rebuilt.
GM 3021C, 3-cylinder, new.
GM 671, 6-cylinder, rebuilt.
GM Twin Diesel, rebuilt.

GENERATOR SETS

Universal 5KW, 1200 RPM, D.C., 220-250 Volts.
Century-Waukesha 15 KW, 1200 RPM, 3/60/127-220.
Century-Continental 15KW, 1200 RPM, 3/60/120-208.
Cummins 25KW, 1200 RPM, 3/60/120-208.
Caterpillar 40KW, 1200 RPM, 3/60/220-440

AIR COMPRESSORS

105 cu. ft. LeRoi tractair with dozer, backhoe.
2—105 cu. ft. Ingersoll Rand Gas Portable.
3—125 cu. ft. Gardner-Denver Gas Portables.
125 cu. ft. Jaeger gas portable.
210 cu. ft. Schramm gas portable.
210 cu. ft. Gardner-Denver Diesel Portable.
315 cu. ft. Schramm gas portable.
500 cu. ft. Ingersoll-Rand, Waukesha power
2—600 cu. ft. Gardner-Denver diesel portables.

L. B. SMITH, INC.
Camp Hill, Pa.
Phone Harrisburg REgent 7-3431

LARGEST SELECTION

ROTARY KILNS—DRYERS—COOLERS

1—Traylor11' x 155' Rotary Kiln, ⅞" shell.
1—Vulcan 10' x 8' x 125' Rotary Kiln, ⅝" shell.
1—Allis Chalmers 9' x 130' Rotary Kiln, ¾" shell.
4—Vulcan 8' x 125' Rotary Kiln, ⅝" shell.
1—Vulcan 8' x 87', ½" shell.
3—Louisville 8' x 50', ⅜" steel shell with 1/16" stainless steel lining.
2—Vulcan 7' x 80', ½" shell.
2—Vulcan 7' x 55', ⅝" shell.
1—Link Belt Roto Louvre Dryer, 7'5" x 24', monel.
2—Link Belt Roto Louvre Dryers, 6'4" x 24', stainless.
1—Allis Chalmers 6' x 60', ½" shell.
1—Rennenberg 6' x 50', ⅜" shell.
1—Rennenberg 5'6" x 50', ⅜" shell.
1—Ruggles Cole 5' x 30', class A-8, Indirect Heat Dryer, ⅜" shell.
1—Allis Chalmers 4' x 40'.
1—Allis Chalmers 4' x 30', ⅜" shell.
2—Ruggles Cole 4' x 20', ⅜" shell.
1—Link Belt Roto Louvre Dryer, 3'10" x 20'.
1—34" x 30', 1/16" shell.
1—Traylor 30" x 18', 1/16" shell, 430 S.S.

MILLS—CRUSHERS—PULVERIZERS

2—Traylor Compeb Mill 7' x 27' with 1—500 HP & 1—600 HP motor 3/60/440.
1—Patterson 7' x 18' two compartment Tube Mill, 400 HP motor.
1—Allis Chalmers 6' x 22' Tube Mill, 250 HP.
1—Smidth 6' x 20' Tube Mill, 300 HP.
1—Smidth 5'6" x 21' Tube Mill.
1—Hardinge 4½' x 24" Steel Conical Ball Mill.
1—Denver 3' x 5' Continuous Ball Mill with steel liners.
1—Superior McCully Gyratory Crusher, 38" dia., 125 HP, 3/60/2200.
1—Telsmith Reduction Crusher no. 46, 50 HP.
3—Kennedy 54" x 24" Two Roll Crushers.
2—Kennedy #6 Gyratory Crushers, 50 HP.
5—Jaw Crushers 12" x 18" to 36" x 48".
1—Penn. Non-Clog Swing Hammermill, size 5060, Hopper opening 47" x 60", cap. 200—275 tons per hour, requires 400 HP motor, UNUSED.
1—Penn. Super-Thor Hammermill, size SXT13, 250 HP.
5—Raymond Bowl Mills, Two Roll, 60 HP.
3—Bradley Hercules Mills 6', Three Rolls, 300 HP.
3—Raymond 5 Roll High Side Mills, 75 HP.

AIR SEPARATORS—SCREENS

1—18' dia. Raymond Double Whizzer Separator with 100 HP motor.
1—14' dia. Raymond Double Whizzer Separator with 60 HP motor.
2—Gayco 8' dia. mechanical Air Separators.
1—Raymond 30" dia. Double Whizzer Separator.
1—Dracco Dust Collecting System type DAAA-3 with Dracco Perfecto Filter #19 Clarage exhaust fan 2000 cfm, 10 HP motor.
1—Tyler Hummer Screen 4' x 10' type 38 with V-52 Vibrators and Thermionic unit.

ELEVATORS—CONVEYORS

14—Link Belt chain mount Elevators 22' to 60' high.
1—24" Troughing Belt Conveyor 75', 7½ HP.
1—Robins 84" x 22' Feeder Conveyor, 15 HP.
1—Robins 24" x 14' Belt Conveyor, 3 HP.
1—Robins 18" x 30' Troughing Conveyor.
1—Fuller-Kinyon Conveying System type H257, 100 HP.
2—Fuller-Kinyon Conveying Systems type 10B-No. R, 75 HP.

For inquiries on Boilers, Diesel Generator Sets, Turbo Generator Sets, Steam Engines, write to our Department P-1.

BRILL EQUIPMENT COMPANY
2401 Third Avenue, New York 51, N.Y.
Tel: CYpress 2-5703

FIRST CLASS EQUIPMENT FROM YOUR FIRST SOURCE

CENTRIFUGALS; Bird cont. conical; 18"x28"; 24"x38" and 32" x 50"; also Suspended Centrifugals with Imp. or Perf. Baskets

FILTERS and **FILTER PRESSES** S.S., Ni-Resist and Wood P. & Frame Filter Presses; Sweetlands, Eimco, Oliver Dorrco Rotary Vac. Filters

DRYERS: Louisville in S/S 30"x28'; S/S Rot. 50"x20'; Proctor & Schwartz Stainless 8' Apron Dryers; 34' long; Send for List.

KILNS; Refractory Lined; all sizes to 11'x155'; Send for List.

CRUSHERS-PULVERIZERS: Jaw, Cone, Roll, Hammer Mills Williams Lab. Hi-Side 3 Roll Pulverizer comp.

We Welcome your Inquiry

FIRST MACHINERY CORP.
209-289 Tenth St. Bklyn. 15, N.Y.
STerling 8-4672

OUR 51ST YEAR

Jeffrey 24x18 "A" Hammermill
Jeffrey 24x20 "B" Hammermill
Farrel 10x4 "C" Jaw Crusher w/motor
New England 14" x 28" Jaw Crusher
Sturtevant #1½ Rotary Crusher
McLanahan & Stone 24x30" Single Roll
Single Roll Coal Crusher 24" D. x 30" F.
Acme Jaw Crusher 9" x 16"
Iowa 25 Yd. Portable Plant
Butler Portable Bulk Cement Plant with 70 Yd. Hopper, 250 BBL Elevator, Weigh Batcher, Scales, Vibrator, etc.
Stone Conveyor 48" x 150', Idlers, Belt, Terminals, 50 H.P. Gearmotor, No Frame.
24" x 115' Truss Type Conveyor.
Conveyor Belt 12" to 30" Almost New.
Conveyor Idlers—All Sizes and Makes.
Steel Grating for Walkways, 95% New.
Small Dust Elevators for Asphalt Plants, 5" and 6" Buckets.
New Holland Plate Feeder 24" x 60".
F44 Syntron Feeder and Controls.
Seco 3-Deck 3x8 Screen, 5 H.P. TEFC motor.
Seco 3½ Deck 3x8 Screen
Niagara 4x14 Single Deck Screen
Niagara 2½ x 12' Single Deck Screen.
Revolving Screen 30" x 19' lg., 4 Sizes.
Revolving Screen 48" x 20', Trunnions.
New Universal Screens in Stock.
Link-Belt D12 Herringbone Reducer.
Link-Belt WB-60 Reducers
50 H.P. 100 R.P.M. Gear Motors.
25, 30, 40 and 50 H.P. Motors.
Link-Belt Car Spotter 5 H.P.

G. A. UNVERZAGT & SONS INC.
136 Coit Street Irvington 11, N. J.
Essex 3-8105

BONDED QUALITY BARGAINS

CURRENT MODELS - IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

BONDED® TROUGHING IDLER CONVEYOR BARGAINS

CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	25'	$1397	$ 738	
14"	50'	2222	1159	$16.84
14"	85'	3377	1748	
16"	20'	1262	667	
16"	45'	2137	1118	
16"	60'	2662	1388	18.04
16"	90'	3712	1930	
18"	25'	1477	797	
18"	45'	2217	1182	
18"	70'	3142	1663	
18"	85'	3697	1952	19.24
18"	100'	4252	2240	
18"	130'	5362	2817	
20"	25'	1517	835	
20"	60'	2882	1548	
20"	75'	3467	1854	20.37
20"	90'	4052	2159	
24"	25'	1590	898	
24"	45'	2430	1334	
24"	70'	3480	1878	
24"	100'	4740	2532	21.79
24"	120'	5580	2967	
24"	150'	6840	3621	
30"	50'	2911	1617	
30"	70'	3871	2112	24.75
30"	90'	4831	2607	
36"	25'	1818	1118	
36"	45'	2858	1677	
36"	60'	3638	2096	27.95
36"	100'	5718	3214	

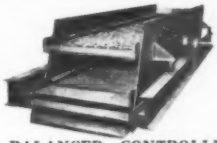
Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2¼" or 2⅞" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. WRITE FOR BULLETIN #1138.

Bonded troughing idler conveyors also available in Truss Frame Construction. WRITE FOR BULLETIN #1189 AND PRICES.

BONDED® GENERAL DUTY AND HEAVY DUTY VIBRATING SCREENS

More than 7000 Mines and Quarries have modernized with Bonded Equipment



PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

Model Number	Screening Area	No. of Decks	Sale Price
124A	2'x4'	1	$ 443
224A	2'x4'	2	472
126A	2'x6'	1	472
226A	2'x6'	2	501
134A	3'x4'	1	504
234A	3'x4'	2	570
136A	3'x6'	1	581
236A	3'x6'	2	688
336A	3'x6'	3	956
138A	3'x8'	1	675
238A	3'x8'	2	815
338A	3'x8'	3	996

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14'. 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

Model Number	Screening Area	No. of Decks	Sale Price
336B	3'x6'	3	$1620
436B	3'x6'	4	1685
138B	3'x8'	1	1510
238B	3'x8'	2	1620
338B	3'x8'	3	1735
248B	4'x8'	2	2310
348B	4'x8'	3	2440
2410B	4'x10'	2	2400
3410B	4'x10'	3	2550
2412B	4'x12'	2	2590
3412B	4'x12'	3	2970
4412B	4'x12'	4	3165

BONDED® QUALITY BUILT BUCKET ELEVATORS

ENCLOSED ELEVATOR

Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models are designed for low cost, high capacity elevating of practically all bulk materials. Open and other types priced on request. There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular, slivery, or pellet shapes, hot or chemically active.

Prices listed at right are for Vertical Enclosed Elevators. Standard Elevators with Chain mounted buckets use #477 or #C102B combination chain. 4, 5 and 6 ply, 32 oz. or 35 oz. duck belt is used on Belt mounted Bucket Elevators.

Bonded Bucket Elevators are Jig Built to insure easy Job-Site Installation.

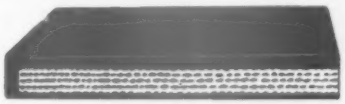
Model No.	Bucket Size Inches	First 20' (Discharge Ht.)	Add or Deduct Per Ft.
Style "A" Spaced Malleable Buckets on Chain			
C53A	5x3½	$1071.50	$20.25
C64A	6x4	1088.50	21.00
C85A	8x5	1235.00	25.50
C106A	10x6	1281.00	27.50
C127A	12x7	1510.00	31.25
C148A	14x8	1673.50	36.00
Style "A" Spaced Malleable Buckets On Belt			
B53A	5x3½	$1099.00	$20.50
B64A	6x4	1116.50	21.25
B85A	8x5	1311.50	27.25
B106A	10x6	1692.50	33.00
B127A	12x7	1854.50	37.25
Style "E" Continuous Steel Buckets On Chain			
C85E	8x5x 7¾	$1397.00	$31.25
C126E	12x6x11¾	1599.00	34.25
C108E	10x8x11⅝	1604.00	34.75
C128E	12x8x11⅝	1624.00	35.50
C148E	14x8x11⅝	1710.00	36.75
Style "E" Continuous Steel Buckets On Belt			
B85E	8x5x 7¾	$1727.50	$34.50
B116E	11x6x 8¾	1859.50	38.75
B128E	12x8x11⅝	2013.00	43.50

A complete line of parts and accessories available to build your own Bucket Elevators. Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices. **WRITE FOR BULLETIN #1203 AND PRICES DESCRIBING COMPLETE LINE OF BUCKET ELEVATORS AND BUCKETS.**

NEW CONVEYOR BELTING

SAVE UP TO 34%

WE PAY FREIGHT ON 200 POUNDS OR OVER



QUALITY TESTED CONVEYOR BELTING*

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.

Heavy Duty 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price	Sale Price
14"	4	$3.63 ft.	$2.83 ft.
16"	4	4.08 ft.	2.97 ft.
18"	4	4.51 ft.	3.29 ft.
20"	4	4.97 ft.	3.80 ft.
24"	4	5.85 ft.	4.26 ft.
30"	4	7.18 ft.	5.21 ft.
36"	4	8.51 ft.	6.18 ft.

Major Bee Brand: 16# to 19# Average Friction Pull, 2400# to 3000# Average Cover Tensile. Skim coat between plies.

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 3/32" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

Width	Ply	List Price	Sale Price
14"	4	$ 4.31 ft.	$3.06 ft.
16"	4	4.85 ft.	3.46 ft.
18"	4	5.39 ft.	3.83 ft.
20"	4	5.90 ft.	4.37 ft.
24"	4	6.94 ft.	4.94 ft.
30"	4	8.53 ft.	6.07 ft.
36"	4	10.09 ft.	7.35 ft.
24"	5	8.14 ft.	5.78 ft.

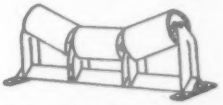
***All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

Other widths, plies, duck weights and cover thickness available at low prices.

WRITE FOR FREE SAMPLE & BULL. #1234

BONDED® IDLERS AND RETURN ROLLS

SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:			
14" belt	$19.75	24" belt	$22.75
16" belt	20.50	30" belt	23.85
18" belt	21.90	36" belt	24.90
20" belt	22.10	48" belt	27.50
1-roll, 5" diameter Return Idlers for:			
14" belt	$ 8.50	24" belt	$11.00
16" belt	9.00	30" belt	12.50
18" belt	9.50	36" belt	13.75
20" belt	10.00	48" belt	16.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. **WRITE FOR BULLETIN #1138.**

BONDED SCALE AND MACHINE COMPANY

PHONE Days: Hickory 4-2186 — **WRITE FOR FREE CATALOG AND PRICES** — **PHONE Evenings: AX. 1-2213, HU. 6-3156**

128 Bellevue — **Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders** — **COLUMBUS 7, OHIO**

SPECIAL ITEMS

C-B 5530 Twin roll, 200 HP elec. motor.
Iowa 53"x60" dbl. Impact hammermill
Traylor 56"x72" sectional frame jaw crusher
Traylor 4' Model TY crusher. Numerous spare parts.
Pennsylvania Trojan heavy duty hammermill Size C-3-30 mang. steel hammers. 50 TPH ¾"

CONCRETE MIXERS

2 Jaeger MDL. 168A. Port. Rubber tired.
Ransome Model 84S, 3 yd. tilting type
Smith 42S, 4 yd. tilting type
Koehring 56S 2 yd non tilting type

TRUCKS—TRANSIT MIXERS

15 Ford F8-6 yd. end dump. Excel. Reinforced, 1955
10 Mack LRSW 22 ton rear dump trucks Cummins NHIRS-600 300 HP Diesel Motor Allison converter-transmission.
6 Euclid 36 TD end dumps 300 HP Cummins Diesel
19 Euclid 28 FD rear dumps 15 ton cap. Cummins
13 Euclids rear dump 12 FD 15 ton; 7 Euclid bottom dump 45 RDT 18 ton
4 Jaeger Transit Mixers 5½ yd. HI-Dis. New 1957
3 Jaeger 5½ yd HI-Dis. Autocar.

CRUSHERS—KILNS—DRYERS

JAW: Acme 10x20, 15x36, 14x24, 14x28, 10x42, 10x32, 18x32, 25x40. Eagle 10x16, 20x36. Diamond 24x36". Cedar Rapids 10x20, 15x36, 20x36, 25x40. Farrell 10x20, 15x30, 14x36, 18x36, 36x48. Buchanan Type C 30x42, 36x42. Traylor 18x36, 24x36. Allis-Chalmers 30x18. Good Roads 10x30. Telsmith 18x32. Universal 18x24.
GYRATORY: Al-Chal 6, 7½, 8, 9, 10, 12, 14, 18, 20". Telsmith TY 4', 3' Gyrospheres
25B Kennedy Van Saun 12, 37½, 38, 49¼"
ROLL: Cedar Rapids 40x20, Pioneer 40x22, 30x18, 54x24 triple roll; Telsmith 24x16.
HAMMERMILL: Jeffrey Type B3 24x20, Type B 36x24, 36x36, 36x42, Eagle 24x24, Stadman 24x30, 36", 42". Cedar-Rapids 50-50, 30x33.
BALL MILL: Hardinge conical 10'x48", 8'x48". 8'x36", complete, motors, Traylor 7'x35'.
TUBE MILLS: Smidth 6'6"x21', 5½x20'.
ROD MILL: Marcy 3'x8' center discharge, 8'x6', Jackson & Church 4'x10'.
AUTOCLAVES: JAC 6'6"x58' Quick Acting; 6'x30'
CONE: Symons 3', 4¼" standard head coarse bowl
KILNS: 4'x42', 5'x30', 6'x50'6", 6'4"x45', 11'x155' Vulcan 9x100, 10'6"x105', 8'x124', 6'x90', 6'x72'.
DRYERS: 6'x60', 6'x72', 8'x24', 6'6"x32', 3'6"x20', 6'x30', 5'x35', 6'x24', 6'x40'.
COMPER MILLS: A-C 7'x24', Patterson 7x18.
FEEDERS: Symetron F55 48x72", 48x60", Jeffrey 35x72" Telsmith 36"x14', Universal 36"x32'

CRUSHING—WASHING—CLASSIFIER

Pioneer 36 Port. Crushing Plant, 10"x18" Model UD-2641H Diesel engine. New 1955.
Pioneer Port. 10x24 jaw 24x16 roll compl. Diesel
C-B 2540 Prim. Port. Diesel
A-W 61E 1024-10C0 jaw crusher
C-B Primary Port. 22x36 Jaw. Diesel.
Eagle 36x25' single screwspiral etc.
Lippman Port. WASHMORE washing plant, 36"x 16" sand classifier, 48"x72" revolv. scrubber etc.
Diamond Wes-Con port. Primary 20"x36" crusher
C-B Port. Prim. 20x36" Diesel R. B.
Eagle BMC Log Washer 48"x30' GM Diesel
Eagle 24"x25' dbl. screw washer 15 HP motor

CONCRETE PLANTS AND EQUIPMENT

Erie-Strayer 120 ton aggr. bin 880 bbl silo ground storage 1300 bbl silo
B-K P3100 3 compt. aggr. Heltzel 450 bbl cement
Erie-Strayer P3 3 compt. 105 tons aggr. bin; cement silo 675 bbls. cement interlocking
Erie Strayer port. New 1955, 40 yds. per hr. 600 bbl. cement silo
Johnson 400 yd 5 aggr. 1500 bbls. cement batch 5000 bbl. silo 3-2 yd mixers
Johnson automatic batch 10,000 bbls. cement storage 3-3 yd mixers; screening equipment.
Johnson TY 228 2 compt. agg. w/TY1320 cement unit
Erie—Strayer 2, 50 T. compts. 880 bbls. cement 750 bbl. silo.
Johnson TY-227 70 cu. yd. 105 ton 3 compt. aggr. bin TY168 batcher
Blaw-Knox BCPC 600 bbl cement silo
Blaw-Knox BCPC 300 bbl cement bin
B-K 3 Comp. 200 yd. ag. bin, cement silo 3000 bbls., 2 Koehring 56-S mixers, charging cement hopper 144 bbls.

SUCTION DREDGES FOR SAND-GRAVEL

Morris 6" Diesel on 14'x36' hull
Ga. Iron Works 6" suc. 6" disc. Diesel New 1957.
10" Portable Diesel powered. Complete.
Amsco 12" suc. 10" Dis. Hull 24'x50' Diesel-Elec. New '55.
Ellicott 8" with cutter. Diesel Hull 48'x18'x3'6"
8" Hydraulic Diesel. On 32'x8' steel pontoons
6" portable Diesel complete with cutters, etc.

SCREENS

New Symons 3'x12' 5 HP. Elec. Motor.
Pioneer 5'x12' 3 deck spring suspension
Cedar Rapids 4'x12' dbl. deck 25 H.P. elec. motor
Pioneer 5'x12' 2 deck 20 HP elec. motor
C-B 4'x14' 2 deck 25 HP motor

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
CO 7-0723 Cable: RICHWALSH

FOR SALE OR RENT

2½ YD. LINK-BELT CRANE-DRAGLINE. K-595. 140' BOOM & JIB. CAT. D17000 ENGINE
80 Ton GE Diesel Elec. Loco. New 1950.
44 Ton Gen. Elec. Diesel Elec. Loco.
25 Ton Whitcomb Diesel Elec. Loco.
40/50 Ton American Diesel Locomotive Crane. New 1944.
30 Ton Browning Diesel Loco. Crane.
90 HP Lidgerwood 2d Diesel Hoist.

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

SPRING CLEARANCE SALE
EIGHT CRANES & SHOVELS

P&H "105" ½ yd. Trench Hoe, mounted Zeligson 6x6 Crane Carrier.
Lorain "TL-20" ½ yd. Trench Hoe, Crane, or Shovel.
Insley "K-12" Used ½ yd. Trench Hoe or Crane, 18" shoes, 8'2" wide, new 10/52, M.M. Gas power, hoe attachment rebuilt, bucket is new.
Lorain "TL-25K" ¾ yd. Crane or Dragline, Cat D315 power, 1951 model. Rebuilt.
Northwest "25" Used ¾ yd. Diesel Dragline.
Sargent "38" Used ⅜ yd. Trench Hoe, mounted Ford 6x4 truck.
Bantam "M-49" Used ⅜ yd. Trench Hoe, mounted on Half Track.
Bantam "T-35" Used ⅜ yd. Trench Hoe, mounted GMC 6x6.
P&H New Shovel Attachment for "255A". Never used. Discounted to sell.

FOUR FRONT END LOADERS

Pettibone "125" Used Speedall 1½ yd. Tractor-Shovel, 4-wreel drive, Torqmatic Transmission, Cab, Hard Rock Lug Tires, Hercules gas. New 8/57.
Hough "HF" Used ¾ yd. Payloader, gas powered.
Terratrac "500" Used Crawler Tractor- Shovel, hyd. controlled.
Caterpillar "D-2" Used Diesel Tractor w/Cable Traxcavator. Selling for parts.

TEN TRANSIT MIXERS

Jaeger 5 Yd. Mixers (3), Continental power, sealed door, rear water entry, unmounted, or mounted on LF172 & LF192 Trucks.
Jaeger 5 Yd. Mixers (2). Continental power, rear water entry, Look new, un-mounted
Smith 5 Yd. Mixer, continental power, sealed hopper, front water entry, un-mounted or mounted on White "2264" Truck.
Smith 4½ Yd. Used Mixer, Continental power, mounted on Dodge Tandem Truck.
Rex 3½ Yd. Used Mixer, Chrysler power, 135 gal. tank, mounted IHC "LF174" tandem axle truck.
Rex 3 Yd. Used Mixer, Continental power, mounted or un-mounted.
Jaeger 3 Yd. Used Mixer, Continental power, mounted Dodge tandem Truck.
Iowa Secondary 4033 Mill 4x12 Screen, Rotovator, 30" Belts, Excellent. Mounted on pneumatics.
LaCrosse 16-Ton Tandem axle Low Boy, tires good, air brakes.
Homade 5-Ton Tilt Top Trailer.
Homade 10-Ton Tilt Top Trailer.
Rogers 20-Ton Low Boy Tandem Axle Trailer.
Maisbary 250-CES New Steam Cleaner. Reduced to sell!
Johnson Used Ready Mix Plant, 120 yd. Ag. Bin, 2 yd. Batcher, Cement Elevator, Ag Elevator, 600 bbl. cement bin, cement batcher. All complete.

120 S. Pierpont Phone WOodland 4-6706
EIGHMY EQUIPMENT COMPANY
ROCKFORD, ILLINOIS

RELIABLE HEAVY EXCAVATION EQUIPMENT

Draglines—Shovels—Cranes—Drills—Trucks

15-W Bucyrus Erie Elec. Drag, 215', 13 yd.
9-W Bucyrus Erie Elec. Drag, 160', 11½ yd.
9-W Bucyrus Erie Diesel Drag, 200', 9 yd.
7400 Marion Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 175', 12 yd.
625 Page Diesel Drag, 150', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.
111-M Marion Drag, 100', 4 yd.
1601 Lima, 4 yd., Shovel/Drag
3900, 3500 & 3000 Manitowoc Cranes
5560 Marion 26 yd. Elec. Shovel
750-B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
151-M Marion 7 yd. Elec. Shovel
170-B Bucyrus Erie 6½ yd. Elec. Shovel
4161 Marion 6 yd. Elec. Shovel
2400 Lima 4½ yd. H. L. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
4500 Manitowoc 5 yd. H. L. Shovel
111-M Marion Standard & H. L. Shovels
3500 Manitowoc Standard & H. L. Shovels
54-B Bucyrus Erie Standard & H. L. Shovels
Large selection of smaller Shovels & Draglines available
Model T-750 Reich Truck Mounted Rotary and Down-the-Hole Drill
McCarthy & Compton Coal Auger Drills
Euclid trucks, truck cranes, dozers, scrapers, front end loaders, attachments and other misc. equipment available

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

PRICED TO SELL

KILNS—COOLERS—DRYERS

7'x60' Bonnot Rotary Dryer
8'x70' Ruggles-Cole Rotary Dryers
8'x115' Vulcan Rotary Kiln
8'x125' & 8'x100' Rotary Kilns
11'x155' Traylor Rotary Kiln
6'x50' & 6'x25' Rotary Dryers
705-24, 502-16 Roto Louvre Dryers

MILLS—PULVERIZERS—CRUSHERS

Jeffrey Hammermills 15"x8" to 24"x18"
Pennsylvania C-3-30 Hammermill 60 HP
Dixie Jr. 2424 Non-Clog Hammermill
Williams 60GA Hammermill 300 HP
Diamond 30"x42" Jaw Crusher 125 HP
Raymond 5 Roll High & Low Side Mills
Raymond #6669 High Side 6 Roll Mill
Hardinge 10'x48" & 8'x30" Conical Mills
14' Gayco Dust Collectors
Tube Mill 6'6"x21'—350 HP Synch.
30"x14' & 40"x13' Pug Mills

MISCELLANEOUS

Clyde Hydrator #3 complete
18"x16'; 36"x6'; 48"x8' Apron Feeders
24"x18' Pan Feeders
60' to 90' Centers Bucket Elevators
2000'—16" to 42" Belt Conveyors
4'x6' & 4'x8' Tyler Hummer Screens
15 to 200 ton cap. Steel Bins
10 ton Gas/Elec. Locomotive 36" ga.
25 ton Diesel/Elec. Locomotive 36" ga.

Write for Detailed Booklet

HEAT & POWER CO. inc.
ROCK PROD. EQPT. DIV.
60 East 42nd St., New York 17, N.Y.
310 Thompson Bldg. Tulsa 3, Okla.

BARGAINS HERE: 750 CFM West. staty Comp. 3x8' Feeder, Univ. 2036, Pioneer 1036, AW81 Plants, 5x17, 5x21, 6x22 Tube Mills, 14' Air Separators, 50' enclosed Elevator, 2x8 sgl. & DD Vib. Screens, Roller, screw & 15" x 30' Port. Conveyors, Unloaders.
DRYERS: 3x20, 4x20, 6x50, 8x70, 8x124, 8x170, 300 HP 2 drum, 500 HP sgl. drum **HOISTS SAUERMAN SCRAPERS:** ¾ to 3 yd. **LOADERS CRUSHERS:** 1020, 1030, 1536, 2036, 2136, 3042, 4042 **JAW:** 9 & 12K Gates, 10, 16, 20 McCully, AC322, 636, 848B, 28", 36", 48", 25B Telsmith, 7½ KVS GYR. 2 & 3' **CONE.** 5424 **DBL. ROLL.**
CRANES: WB2 Browning Wagon, 20, 30 & 60 ton Bridge, 60 ton Brownhoist Loco. 36"x20' dbl **LOG WASHER.** Telsmith 2 Screw.
MILLS: Raymond 5047, CR2033, 4033.
SHOVELS: NW25, 6, 80D. Lima 34, 44, 1201. Lorain 50, 820. Koehring 702, 1005. P&H 955, 1055, 620W. Marion 111M, 492, Bucyrus 54B. 71B, 120B, 200W. 9W. Manitowoc 4500.
CRANE RUNWAY lattice type 270'.

MID-CONTINENT EQUIPMENT CO. INC.
8321 Gannon St. Louis 24, Mo. Wydown 1-2826

Barber Greene 840 & 848 ASPHALT PLANTS. 4—6 x 14 Simplicity VIBRATING FEEDERS. 35—Link Belt 10" SCREW CONVEYORS 10½'. Link Belt DEWATERING ROTOSCOPE 12 ft. dia. 5 x 12 Hardinge COUNTER CURRENT CLASS. HYDRATED LIME PLANT 50 tons per day. 2', 3' & 4' SYMONS. 30 x 18 C.R. ROLL. PORTABLE PLANTS: Lippmann 1830 Jaw & 1830 roll — Cedar Rapids Rockit — Pitmaster Jr. Tandem—Pioneer 34-V & 38-V—Universal 880 Jr.—1036, 1824, 2036 Prim.—3030 Impactor. Jaw, Cone, Gyratory, Roll, Hammermill & Impact Crushers—Ball, Rod & Tube Mills—Screening, Washing & Crushing Plants—Classifiers — Compressors — Conveyors — Cranes — Drills—Dump Cars—Dredges—Engines & Motors—Feeders — Generators — Hoists — Kilns & Dryers—Locomotives—Pumps—Screens—Shovels & Drags—Transformers—Euclid Trucks.
Equipment List Sent on Request
STANLEY B. TROYER EQUIP. CO.
Box 97 Crosby, Minnesota

ELEC. AIR COMPRESSORS
2—3078', 2—2200' & 3—3800' Inger. Rand

DIESEL ELEC. LOCOMOTIVES
4—65 ton Whitcomb 2—25 ton & 1—70 Ton
2—45 ton & 1—80 ton & 4—100 ton Gen. Elec.

ROTARY DRYERS & KILNS
36" x 20', 5' x 25', 6' x 72', 9' x 125',
5' x 35' Ruggles-Coles XA-8 Dbl. Shell.
33" x 18' Rotary Kiln W/Drive & Burner

REDUCTION MILLS & FEEDERS
4' x 8', 6'6" x 14'6" & 8'6" x 12' Rod Mills
5' x 10' Kennedy-Van Saun Rod Mill
2—No. 77 & 1—96 Marcy Ball Mills
4¼' Symons Std. Cone Crusher
30" x 42" & 24" x 36" Pioneer Jaw Crushers
30" x 36" & 36 x 42 Traylor Jaw Crushers
25B Telsmith Primary Breaker
20" x 36" & 24" x 36" Pioneer Jaw Crusher
14" & 28" New England Road Machinery
15x24 & 10x36 Cedar Rapids Jaw
3—200 HP & 160 HPSD. Ottumwa Elec. Hoists.

ELEC. WHIRLEY CRANES
2 Amer. R20-60 Ganty 139' Boom

WANTED TO BUY
KILNS—DRYERS—CRUSHERS

R. C. STANHOPE, INC.
60 E. 42nd St., N.Y. 17, N.Y.
TEL. MER 2-3076 & 2-1898

SPECIALS

#1 Raymond Mill
6'-5"x100' & 6'x120' Kilns
Complete Lime Hydrating plant.

CRUSHERS

1—48" x 60", 42" x 40", 30" x 36", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.
2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.
#636 & #848 Allis-Chalmers Hydrocone Crushers.
1—6", 10", 16", 20" McCully Superior Gyratory Crushers.
No. 3 up to No. 12 Gyratory Crushers.

BALL & TUBE MILLS

2—5½'x20', 5'x22', 6'x22', 7'x24' & 7'x35'

DRYERS

8½'x65' & 8'x60

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.
50 Broad St., N.Y. Tel. Wh. 4-4236

CEDARAPIDS 4350 Impact Portable Plant, with 42 x 12 Apron Feeder, 36" x 50' conveyor, all electric powered, on gooseneck frame, less running gear. #15505. Used soft limestone rock. Excellent. Capacity, 250-400 TPH. Less 50% new cost. $37,500.

CEDARAPIDS 25 x 40 Jaw Portable Plant w/apron feeder, conveyor, cat. D13000 diesel, tandem axles. $18,500 Indiana.

UNIVERSAL 293QH4 SENIOR PLANT PORTABLE with 20 x 36 rb. Jaw, 3 x 8 feeder, grizzly, 4x12 2-deck screen, rotovator, 30" conveyors, 26x36 hammermill, two Cat. D337 diesel power units, mounted tandem axles, pneumatic tires, very late model, crushed only 150 thousand tons of soft limestone rock. Excellent. Capacity 80-120 tph 1" minus. Cost over $70,000 Sell $48,500 Terms available.

CEDARAPIDS 3042 Impact Portable Plant with 14' apron feeder, 30" x 30' underconveyor, Murphy ME66 diesel power, tandem rubber, #14066, new 1952, reconditioned. $27,500 Terms.

ROGERS 2-Unit Portable Plant w/1836 rb. Jaw, apron feeder, conveyor, GMC 371 diesel, tandem rubber. Secondary Portable w/3033 hammermill, 4x10 screen, Cat. diesel, rotovator, conveyors, tandem rubber. Fair. $22,000 Rental Purchase.

UNIVERSAL 293Q Portable Plant w/1824 rb. Jaw, apron feeder, 3018 rb. roll, 3x10 2-deck screen, rotovator, plant & Delivery conveyor, tandem rubber, UD24 IHC diesel. $15,000 Rental Purchase.

WILLIAMS NF20 Hammermill, like new, used 7 days. $1650.

WORTHINGTON HM40 Wagon Drills, brand new, cost $4850, our price $2000 each. Yard.

WORTHINGTON WS55 Rock Drills, brand new, 1" steel, less ½ price $255 each.

VIBRATING SCREENS, Telsmith 5x12 3-deck w/motor, excellent. $3250 Simplicity 4x12 Mdl. D, hvy. duty, factory rebuilt. $2750 Telsmith 3x10 2-deck w/motor, excellent. $1250 Deister 4x8 2-deck, new, save 40%, $2500 Symons 3x10 2-deck flat, good. $750 Simplicity 4x8 3-deck. $1500.

TELSMITH 42"x12' apron feeder, good. $1500. Yard. Also Cedarapids 3x8, very good. $1650.

BARBER GREEN 522 Bucket Loader on rubber w/swivel conveyor, excellent. $1250 Yard.

LORAIN L41 Shovel, ¾ cy, hvy. duty, #19568, W/Cat. D318 diesel. $6000 Yard.

LINK BELT LS85 Shovel, ¾ cy, heavy duty, #7A1324, new 1950, w/Cat 318 diesel, bargain. $6850 Yard.

LIMA 34 Paymaster Shovel, #327725, new 1952, used 360 hrs. Like new, just out of Govt. warehouse. $12,500 Yard.

KOEHRING 1005 Shovel, 2½ cy, #6859, w/new Buda 1879 supercharged diesel, reconditioned, very good. $18,000 Terms.

SHOVEL FRONTS for P&H 655B, new & complete. $4850 P&H 655A, good. $1950 Bucyrus 22B, new. $1500 Unit 1020A, new. $1250 N.W. 25, complete, excellent. $1750 Yard.

SHOVEL BUCKETS for P&H 655, new, bargain. $1000 Yard.

WENZEL MACHINERY COMPANY
565 S. 10th, Kansas City, Kans. Mayfair 11710

CONCRETE MIXING PLANTS and Aggregate Handling Equipment.
LOCOMOTIVES, DIESEL ELECTRIC: For Sale or Rent—20 ton, 50 ton, 80 ton, 100 ton, 125 ton.
CAR DUMPER: Link Belt, std. railroad gauge, Rotary type, 63 ft. transfer table.
BUCKET ELEVATORS: Boot type, fully enclosed, buckets 8 x 16 on 111 and 132 chain, 36 ft., 98 ft. high, boots 4'10" x 2 ft., motors 220/440 volt, A.C.
OVERHEAD ELECTRIC TRAVELING CRANES: 80 ft. span, 15 ton capacity, 4 motor, bucket operating, cab control, 440 volt, 3 phase, 60 cycle. One 25 ton, 56 ft. span, direct current.
PIPE: 3000 ft. 8½" O.D. standard line pipe, 18 ft. and 24 ft. lengths.
JAW CRUSHERS: Buchanan type C, all steel, 42 x 30" with motor and drive. Allis Chalmers 42 x 40" and one all steel type A-1 size 42 x 32". One Farrel type B size 42 x 30" and one 36 x 15".
REDUCTION CRUSHERS: Symons 4 ft. Short Head, one 4 ft. standard and one 2 ft. standard.
BALL MILL: 8 ft. x 11 ft. with 300 H.P. motor, new 1956, like NEW.
CLASSIFIER: Dorr Bowl and Rake 19' x 8' x 37'6", new condition.
AIR SEPARATORS: Raymond 5'6" Whizzer. Sturtevant and Gayco 14 ft. and 16 ft.
SHOVELS, ELECTRIC: Bucyrus Erie 120-B, 5 yd. capacity and 170-B, 6½ yd. capacity.
BUCKET: Williams 1¼ yd. clam shell, material handling.
MINE HOISTS: One Nordberg double drum 10' x 10', both drums clutched, 1250 H.P., 2200 volt, 3 phase, 60 cycle, thoroughly modern, condition like new. Other hoists single and double drum, 100 to 2500 H.P.
MOTORS & CONTROLS for Mine Hoist Service: 150, 200, 250, 300, 450, 600, 700 and 1500 H.P.

WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA

A. J. O'NEILL
Lansdowne Theatre Building
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300—3-8301

FOR SALE
New Bulk Cement Trailers
3—Gravity 6—Auger
Designed for 50' O.A.L.
& 73,280 G.V.W.

Call or Write BILL BECKER

DAN DUGAN
OIL TRANSPORT COMPANY
Sioux Falls, South Dakota
Phone 4-6011

FOR SALE

1 Ton McCarter Asphalt Mixing Tower complete with Robbins 3 x 10 D Deck Screen, Howe Dial Scales, Modern asphalt spray type weigh bucket, 60 ton per hour elevator—Available for immediate delivery.

TRI COUNTY ASPHALT CORP.
Roseland, N. J. CApitol 6-5555

JAW CRUSHERS
60"x48" to 6"x3"
New and used RELIABLE

"Farrel-Bacon" Jaw Crushers

BACON-PIETSCH CO., INC.
26 Park St., Montclair, N. J.
29 Washington Ave., Hamden, Conn.
Phone Montclair—Pi 6-1300

EUCLIDS FOR SALE

13 Trucks 28FD
Cummins HBID Diesel
7 Bottom Dump Wagons 58W
Tractor 43FDT GMC 6-71 Diesel

Photos sent on request
Located in our shop
All in good running condition with good rubber

Pelham Manor, N. Y. **EDWARD EHRBAR INC.** PElham 8-5100
U594

1—13" x 30" Type B Farrel Bacon Jaw Crusher
1—10" x 20" Allis-Chalmers Blake Type Crusher
1—36" Telsmith Gyrasphere Crusher plus many repair parts
1—Farrel 6" x 2" Laboratory Crusher
1—Hardinge Conical Ball Mill 8' x 22"
1—3' x 8' Hardinge Rod Mill & spare liners
1—36" x 20' Revolving Screen
1—36" x 11' Revolving Screen with Scrubber
1—30" x 14' Revolving Screen
1—3' x 5' Link-Belt Foundry Shakeout Screen
New All-Steel & Manganese J. & H. Hammer Mills 5½" x 18"

We build open and totally enclosed bucket elevators and belt conveyors to suit your needs.

Large stock chain, sprockets, buckets and conveyor pulleys—new and used.

JOHNSON & HOEHLER, INC.
P. O. Box 152, Lansdowne, Pa.

DEPENDABLE USED MACHINES

P & H Model 255A ¾ yard Backhoe powered by Cat. Diesel Model D-315

American car pullers	Adams Tandem Grader 42-C	Cletrac DGH & Drott loader
½ yd. Bay City 25 hoe	4-wheel Bay City trailer	Insley K-12 dragline ½ yd.
Unit #614 backhoe	Telsmith 4x10 d.d. screen	Pioneer 30"x200' conveyor
Model 105-TMC Hopto	Telsmith 5x16 d.d. screen	¾ yd. Trojan LC-100 loader
Amer. 50B 3 drum hoist	Telsmith 5x14 d.d. screen	Unit Model 514 ½ yd. backhoe

This equipment rebuilt in our modern plant by expert mechanics. Come see it!

10002 Southwest Highway **TRACTOR & EQUIPMENT CO.** Oak Lawn, Illinois

15"x36" Diamond Jaw Crusher, BB
48"x60" Allis Chalmers Blake Jaw Crusher
30"x36" Traylor Blake Jaw Crusher
28"x36" Traylor Blake Jaw Crusher
10"x36" Buchanan Blake Jaw Crusher
12"x24" Buchanan Blake Jaw Crusher
10"x20" Power Blake Jaw Crusher
24"x36" Farrel 14B Blake Jaw Crusher
30"x42" Buchanan Jaw Crusher
18"x24" Universal Jaw RB Crusher
25"x36" Telsmith Overhead Eccentric Jaw Crusher
18"x32" Telsmith Overhead Eccentric Jaw Crusher
9"x36" Ditto.
2—28" Telsmith Inner cone Crushers
2—10"x40" Good Roads Jaw Crusher
16" Telsmith Gyratory Crusher
25" Telsmith Gyratory Crusher
13" Telsmith Gyratory Crusher
20-B" Telsmith Gyratory Crusher
2—13"x30" Farrell Jaw Crushers
5'x12' Tripple deck Telsmith Screen
30"x8' feeder
36"x8' feeder
HM-05-CF Pettibone Mulliken Hammermill
22"x40" Tripple Roll Pioneer Crusher
½ yard Link Belt Shovel Front.

BLUE BALL MACHINE WORKS

Blue Ball, Pennsylvania

FOR SALE

3—29-T BUCYRUS-ERIE Wire Line Blast Hole Drills

2—42-T BUCYRUS-ERIE Wire Line Blast Hole Drills

1—TRAYLOR Model T2 Gyratory Crusher

1—Model 80 Diesel-Powered HAISS LOADER

1—Model 80W Gas-Powered HAISS LOADER

1—D-6 CATERPILLAR Bulldozer

NEW YORK TRAP ROCK CORP.

Old Mill Road
West Nyack, New York
Telephone - NYack 7-4500

FOR SALE OR LEASE

One 1958 2½ cu. yard Lorain Shovel Model 85A used two months with Caterpillar Diesel 337F with torque converter and all manganese dipper.

One 1958 Ingersoll Rand Quarry Master Rockdrill with 6½" down-the-hole-hammer mounted on heavy duty double tandem White Motor Truck. Complete with many extras.

We are interested in quarry and drilling contracting.

ROCKCRETE PRODUCTS COMPANY
3660 Carpenter Road Ypsilanti, Michigan
HU 2-0377

Crushing & Mining Equipment

Jaw Crushers, Cones, Rolls, Conveyors, Screens, Bins, Hoists, Feeders, Mine Cars, Locomotives, Draglines, Shovels, Scales, Stacklines, Dryers, Kilns, Screw Classifiers, Washing Plants. We Specialize in good used Crushing & Mining Equipment. We might have what you need near you. (Let Us sell your idle equipment)

Charles A. Constance & Sons
Box-2222. Asheville, N.C. Phone AL-33968

BEST BELT BUYS

2500-3000# cover tensile, 16-19# friction pull, brand new. 3 weeks delivery.

14"	4 ply 28 oz	1/8"x1 1/2" $2.43
16"	4 ply 28 oz	1/8"x1 1/2" $2.74
18"	4 ply 28 oz	1/8"x1 1/2" $3.04
18"	4 ply 28 oz	1/8"x1 1/2" $3.20
20"	4 ply 28 oz	1/8"x1 1/2" $3.32
24"	4 ply 28 oz	1/8"x1 1/2" $3.92
24"	4 ply 32 oz	1/8"x1 1/2" $4.14
30"	4 ply 32 oz	1/8"x1 1/2" $5.08

Also other sizes. Free samples. Distributors protected.

PALTECH CO.
New Canaan, Conn. WO 6-4073

FOR SALE

2—#60 Williams Roller Breaker Crushers. Due to voluntary liquidation, the two used hammermills are being offered for sale for $4,000.00 each, including with each unused tips, bars and parts which cost $3,100.00. Present new cost of each unit about $20,000.00.

KENTUCKY ROCK ASPHALT COMPANY
Brownsville, Kentucky
Telephone - Lynwood 7-3840

RAILS—All Sections
NEW RELAYING—All Accessories

TRACK EQUIPMENT, FROGS—CROSSINGS—TIE PLATES, CONTRACTORS AND MINE & MINING MACHINERY CARS

M. K. Frank Grand Central Palace, New York 401 Park Bldg., Pittsburgh, Pa. 105 Lake Street, Reno, Nevada 1209 Metropolitan Bank Bldg., Miami, Fla.

IMPACT BREAKER

CEDARAPIDS 3042 Portable Primary includes 3' x 10' apron feeder, IHC UD1091 Diesel engine, delivery conveyors, good tires and running gear. Priced for immediate sale.

Call, wire or write for complete description, price, and pictures.

GIBBS COOK EQUIPMENT CO.
P.O. Box 936, Ph. CHerry 3-1176
Des Moines, Iowa

RP BUYER RESEARCH SERVICE

PRODUCER PURCHASING SERVICE *FREE*

QUICK—COMPLETE SOURCE CONTACTS FOR ROCK PRODUCTS PRODUCERS on Machinery—Equipment—Supplies—Service

___Aftercoolers, Air
___Agitators
___Aggregates (special)
___Air Compressors
___Asphalt Mixing Plants
___Bagging Machines
___Bags
___Barges
___Belting, Conveyor Elevator, Power Transmission
___Belting, V-type
___Belt Repair Equipment
___Bin Level Indicators
___Bins and Batching Equipment
___Bits
___Blasting Supplies
___Bodies, Trailer
___Buckets
___Bulldozers
___Cars, Industrial
___Classifiers
___Clutches
___Coal Pulverizing Equipment
___Concentrating Tables
___Conveyors
___Crushers
___Coolers
___Cranes
___Derricks
___Dewatering Equipment, Sand
___Diesel Engines
___Dragline Cableway Excavators
___Draglines
___Dredge Pumps
___Drilling Accessories
___Drills
___Dryers
___Dump Bodies
___Dust Collecting Equipment & Supplies
___Electric Motors
___Engineering Service Consulting and Designing
___Explosives & Dynamite
___Fans and Blowers
___Feeders
___Fifth Wheel Heavy Duty Special
___Flotation Equipment
___Front End Loaders
___Gasoline Engines
___Gear Reducers
___Generator Sets
___Grinding Media
___Gypsum Plant Machinery
___Hard Surfacing Materials
___Hoists
___Hoppers
___Kilns: Rotary, Shaft, Vertical
___Locomotives
___Lubricants
___Magnetic Separators
___Mills
___Pipe
___Pumps
___Scales
___Screen Cloth
___Screens
___Scrubbers: Crushed Stone, Gravel
___Shovels, Power
___Speed Reducers
___Tanks, Storage
___Tires and Tubes
___Torque Convertors
___Tractor Shovels
___Tractors
___Trailer Dump Bodies
___Trucks, Bulk Cement
___Trucks, Industrial
___Trucks, Mixer Body
___Trucks, Motor
___Valves
___Vibrators
___Welding and Cutting Equipment
___Winches
___Wire Cloth
___Wire Rope

If equipment you are in market for is not listed above, write it in space below.

The principal rock product(s) manufactured by my company is/are indicated "1", "2", "3", in order of importance below.

___Crushed Stone
___Sand & Gravel
___Slag
___Cement
___Lime
___Gypsum
___Ready Mix Concrete
___Concrete Products Type_____
Other nonmetallic mineral (What?)_____

All above information is strictly confidential to be used to guide the manufacturers in supplying proper information.

Please Check Service Desired

☐ Have Salesman Call ☐ Literature only
☐ Prices ☐ By mail ☐ Urgent

NOTE: See—Where to Buy-Classified Advertising Section for used equipment and complete plant information

Name_____
Title_____
Firm_____
Street & No._____
City and State_____
Your Signature_____ Title_____

FILL IN—TEAR OUT—MAIL NOW! *BUYER RESEARCH SERVICE DEPARTMENT:* **ROCK PRODUCTS** 79 W. Monroe St. Chicago 3, Illinois

MOTORS AND GENERATORS
All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.
EXPERT REPAIR SERVICE
NUSSBAUM ELECTRIC COMPANY
220 E. Douglas Ave., Fort Wayne, Ind.

FOR SALE
Cedar Rapids Commander Tandem Crushing Plant, completely portable, S/N 19141, with 48" x 10' Screen, also attached Pre-Screening Unit, GMC 6-110 engine, S/N 6B13486, 10 x 36 jaw, 30 x 25 roller crusher, mounted on twelve 9:00 x 20 tires. Actually used three months. Write or phone—H. H. Mass Construction Company, Algonquin, Illinois, telephone OL-iver 8-4551.

FOR SALE
4—9' x 22' Tube Mills, completely rebuilt
2—16' Sturtevant Separators
1—#5057 Raymond Pulverizer
CHARLES V. FISH CO., INC.
530 Hamilton St. Allentown, Pa.
Phone: Hemlock 5-4701

FOR SALE
1 Haiss Bucket Loader Model 75W $3750.00
LAMAR STONE CO.
Box 428 Princeville, Illinois
Telephone Edelstein 2251

2½ YD. HEAVY DUTY CLAMSHELL BUCKET, Blaw-Knox Size 0711 with teeth. Wt. 12,000 lbs. Condition like new. Price $4,250.

ASPHALT PLANT, Standard Steel 3000 Lb., excellent condition. Price $45,000.

SUN EQUIPMENT CO.
P.O. Box 4074, Bayshore Sta., Oakland 23, Calif.

BIG DRAGLINE
MANITOWOC Model No. 4500, Ser. No. 4701, with 7 cu. yd. bucket, 140 ft. boom, Superior Engine 40-8-6, 60" crawler treads, lights, Wince 10 KW main engine driven generator, Hobard 5 KW auxiliary generator and compressor, upper and lower windshield wipers and cab heater. Excellent condition throughout. Only 5300 hrs. on the machine. Located Northeast Iowa.
MARK EISCHEID CONTRACTING CO.
New Hampton, Iowa

Marion dragline—Model 360—Serial Number 6171. Electric power by G.E. 435 H.P. Motor 2300 volt. 175 foot boom with one eight cu. yd. and one ten cu. yd. drag buckets. Location 10 miles southwest of Kinder, La. within one mile of railroad connections or 5 miles navigable river. Operating when shut down. Offered for immediate disposition.
Box R-10, ROCK PRODUCTS
79 W. Monroe
Chicago 3, Ill.

500,000 FT. 8 IN. PIPE
Wt. 28 lbs., Lapweld. Plain and Beveled. 20 or 40 ft. lengths, No. 1 grade. Also 35,000 ft. 40#. 10" Plain end. No. 1.
Indiana-Ohio Pipe Co.
Phone 34674—P.O. Box 323
Decatur, Indiana

EQUIPMENT WANTED

Wanted
Turn your unused Equipment into cash money fast. Have large buyers market. Nothing too large or too small. Equipment of all types for rent. Call or write full details to
World Equipment & Machine Co.
Marriottsville, Md. Phone Davis 8-2237
W. Makowski, Pres.

WANTED HELP—POSITIONS

SALES ENGINEERS
Explosives manufacturer has attractive sales openings for men with technical or practical background. Men under 30 preferred. Considerable travelling. Liberal benefits. An excellent opportunity to apply your knowledge of mining, quarrying, construction, and related industries.

Replies held in strict confidence. Send complete resume (photograph optional) to
P. O. Box 1071
Wilmington, Delaware

MASTER MECHANIC
Crushed stone quarry in Chicago area. Write, giving complete details of experience, education and salaries earned. Confidential. Box Q-89, Rock Products, 79 West Monroe St., Chicago 3, Ill.

MASTER MECHANIC WANTED
Large cement company needs master mechanic. Must have supervisory ability and be familiar with machine shop operations. In reply, give experience, references, and salary desired. Replies confidential. Box Q-96 ROCK PRODUCTS, 79 W. Monroe. Chicago 3, Illinois.

WANTED—QUARRY MANAGER
To operate 200 T.P.H. Stone Plant and Asphalt Plant, including setting up same. Send full particulars to County Line Stone Co. Inc., County Line Road, Akron, N. Y.

POSITION WANTED: as temporary assignment by a graduate Engineer with 20 years experience in the production of cement, lime and other industrial minerals. Engineering and maintenance supervision, design and plant layout, equipment specification, combustion engineering, raw material examination and property mapping, research and product development, supervision of construction and plant operations, crushing and grinding, and classification studies for increased production. Will submit detailed qualifications and renummeration schedule on request. Box R-7, Rock Products, 79 W. Monroe, Chicago 3, Ill.

Try A Small Ad For Quick Results

INDEX TO WHERE TO BUY

Bacon-Pietsch Co., Inc. 235
Blue Ball Machine Works 236
Bonded Scale & Machine Co. 233
Brill Equipment Co. 231, 232

Constance, Charles A., & Sons 236
Corson, Inc., G. & W. H. 231
County Line Stone Co., Inc. 237

Dugan, Dan, Oil Transport Co. 235

Ehrbar Inc., Edward 235
Eighmy Equipment Co. 234
Eischeid, Mark, Contracting Co. 237

First Machinery Corp. 232
Fish, Charles V., Co., Inc. 237
Frank, M. K. 236

Gibbs Cook Equipment Co. 236

Heat & Power Co., Inc. 234
Heidenreich, Jr., E. Lee 237
Heineken, Inc., W. F. 235

Indiana-Ohio Pipe Co. 237

Johnson & Hoehler, Inc. 235

Kentucky Rock Asphalt Co. 236

Lamar Stone Co. 237
Land, L. J., Inc. 231

Mass, H. A., Construction Co. 237
Mid-Continent Equipment Co., Inc. 234

New York Trap Rock Corp. 236
Nussbaum Electric Co. 237

O'Neill, A. J. 235

Paltech Co. 236
Perry Equipment Corp. 231

Rockcrete Products Co. 236

Smith, Inc., L. B. 232
Stanhope, R. C., Inc. 235
Sun Equipment Co. 237
Swabb Equipment Co., Inc., Frank 234

Thomasville Drilling & Testing Co., Inc. ..237
Tractor & Equipment Co. 235
Tri County Asphalt Corp. 235
Troyer, Stanley B., Equipment Co. 234

Unverzagt & Sons, Inc., G. A. 232

Walsh Co., Richard P. 234
Wenzel Machinery Co. 235
Whisler Equipment Co. 234
World Equipment & Machine Co. 237

Chief Chemist currently affiliated with a well known cement company desires a position commensurate with his ability and experience. Thirty-five years in cement manufacturing. Thoroughly familiar with all types of Portland Cement including high temperature oil well.

Candidate has good personality, cooperative and is in excellent health. Climate preference, dry or semi dry but will consider other locations if inducement is satisfactory. Married, no children. Will be available within thirty days. Box Q-93, Rock Products, 79 W. Monroe, Chicago 3, Illinois.

CONSULTING ENGINEERS AND SERVICES

Core Drilling
Minerals Clays Limestone
Foundation Testing
Buildings Highways
THOMASVILLE DRILLING & TESTING CO., INC.
Thomasville, Pennsylvania.

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. LEE HEIDENREICH JR.
CONSULTING ENGINEERS
75 Second Street
Newburgh, N.Y.
Phone 1828

Operation
Plant Layout
Design
Appraisals
Construction

INDEX TO DISPLAY ADVERTISERS

Acme-Hamilton Mfg. Corp. 182
Allis-Chalmers,
Construction Machinery Div. 18
Industrial Equipment
Div. ..142, 143, 145, 147, 149, 151
Armstrong-Bray & Co. 222
Associated Business Publications .230
Atlas Powder Co. 198

Babcock & Wilcox Co. 227
Bailey Meter Co. 139
Barber-Greene Co. 17
Bath Iron Works Corp.
Pennsylvania Crusher Div. 163
Bemis Bro. Bag Co. 29
Blaw-Knox Co. 162
Bradley Pulverizer Co. 69
Brook Motor Corp. 63
Bucyrus-Erie Co. 174
Buell Engineering Co. 126, 127

Cambridge Instrument Co., Inc. ..209
Canadian Refractories Ltd. 161
Case, J. I., Co. 122, 123
Caterpillar Tractor Co. ..54, 55, 70, 71
Clark Equipment Co. 78, 79
Cleveland Wire Cloth & Mfg. Co. .200
Coates Steel Products Co. 136
Coen Co. 178
Colorado Fuel & Iron Corp. ..119, 176
Columbia Steel Casting Co., Inc. .. 44
Combustion Engineering, Inc.
Raymond Div. 208
Crescent Belt Fastener Co. 210

Detroit Diesel Engine Div.
General Motors Corp. 173
Dewey & Almy Chemical Div.
Grace, W. R. & Co. 184
Diamond Power Specialty Corp. ..214
Dodge Mfg. Corp. 169
Drilling Accessory & Mfg. Co.,
Inc. 132
Dustex Corp. 68

Eagle Iron Works 31
Ehrsam, J. B., & Sons Mfg. Co. ..193
Electric Machinery Mfg. Co. 213
Euclid Div.
General Motors Corp. 64, 65

Falk Corp. 196
Fate-Root-Heath Co. 217
Flexible Steel Lacing Co. 41
Ford Motor Co. 58, 59
Foxboro Co. 223
Fuller Co.
Subsidiary of General American
Transportation Corp. 207

General American Transportation
Corp., Fuller Co., Subsidiary ...207
General Motors Corp.
Detroit Diesel Engine Div. 173
Euclid Div. 64, 65
General Refractories Co. 42, 43
Goodrich, B. F., Co. 3
Goodrich, B. F., Tire
Co. 33, 34, 35, 36, 37, 38, 39, 40
Goodyear Tire & Rubber Co.
Industrial Products
Div. .....Back Cover

Grace, W. R. & Co.
Dewey & Almy Chemical Div. ..184
Green, A. P., Fire Brick Co. 192

Hannon & Sons, F. R. 68
Harbison-Walker Refractories Co. 201
Hardinge Co., Inc. 50
Harnischfeger Corp.
P&H Construction & Mining
Div. 46, 47
P&H Diesel Engine Div. 27
Harsco Corp.
Taylor Wharton Co., Div. 138
Hayward Co. 63
Hercules Powder Co., Inc. 183
Hewitt-Robins 197
Hough, Frank G., Co. 12, 13
Huber-Warco Co. 49
Hudson Pulp & Paper Corp. 51

Illinois Gear & Machine Co. 80
International Harvester
Co. .73, 74, 75, 76, 102, 103, 104, 105
Iowa Mfg. Co. 62

Joy Mfg. Co. 222

Kaiser Aluminum & Chemical
Sales, Inc. 15
Kennedy Van Saun Mfg. &
Eng. Corp. 108, 109

Leeds & Northrup Co. 6
LeTourneau-Westinghouse Co.
Subsidiary of Westinghouse Air
Brake Co. 157, 159
Lima Austin-Western, Construction
Equipment Div.
Baldwin-Lima-Hamilton Corp. .137
Lincoln Engineering Co. 21
Link-Belt Co. 1
Ludlow-Saylor Wire Cloth Co. ...133

Mack Trucks, Inc. 116, 117
Manhattan Rubber Div.
Raybestos-Manhattan, Inc. 112, 113
Manitowoc Engineering Corp.
Subsidiary of the Manitowoc Co.,
Inc. 218
Manitowoc Shipbuilding, Inc. 226
Marsh, E. F., Engineering Co. 48
Massey-Ferguson Industrial Div.
Massey-Ferguson, Corp. 195
Maxi Corp. 210
McCaffrey, M. P., Inc. 187
McDermott Bros. Co. 224
McLanahan & Stone Corp. ..170, 171
Merrick Scale Mfg. Co. 209
Miag Northamerica, Inc. 4
Morris Machine Works 188

Naylor Pipe Co. 168
Nordberg Mfg. Co. 66, 67
Northern Blower Co. 52
Northwest Engineering Co. 5

Olin Mathieson Co. 225
Overstrom & Sons, Inc. 194

Owen Bucket Co. 175

P&H Construction & Machinery Div.
Harnischfeger Corp. 46, 47
P&H Diesel Engine Div.
Harnischfeger Corp. 27
Pennsylvania Crusher Div.
Bath Iron Works Corp. 163
Pioneer Engineering Div.
Poor & Co., Inc. 45
Plibrico Co. 180
Porter, H. K. Co., Inc.
Thermoid Div. 165

Raybestos-Manhattan, Inc.
Manhattan Rubber Div. ...112, 113
Raymond Div.
Combustion Engineering, Inc. ..208
Remington Arms Co., Inc. 220
Rockwell-Standard Corp.
Transmission & Axle Div.-
Detroit 57

SKF Industries, Inc. 204
Sauerman Bros., Inc. 23
Schield Bantam Co. 199
Screen Equipment Co., Inc. 189
Simplicity Engineering Co. 202
Sly, W. W., Mfg. Co. 56
Smidth, F. L., & Co. ...8, 11, 155, 221
Smith Engineering Works 53
Southwestern Engineering Co. ...203
Spraying Systems Co. 194
Standard Metal Mfg. Co. 164
Stearns-Roger Mfg. Co. 211
Straub Mfg. Co., Inc. 216
Sturtevant Mill Co. 60
Syntron Co. 167

Taylor-Wharton Co.
Div. of Harsco Corp. 138
Texas Co. 25
Thermoid Div.
Porter, H. K. Co., Inc. 165
Timken Roller Bearing
Co. .....Inside Back Cover
Tractomotive Corp. 191
Traylor Engineering & Mfg. Co. .. 7

United States Steel Corp. 179
Universal Road Machinery Co. ...200
Universal Vibrating Screen Co. ..212

Vulcan Iron Works 166

Wall Colmonoy Corp. 160
Western Machinery Co. 61
Western Precipitation Corp. 229
Westinghouse Air Brake Co.
LeTourneau-Westinghouse Co.,
Subsidiary 157, 159
West Virginia Pulp & Paper Co.
Multiwall Bag Div. 177
Wickwire Spencer Steel Div.
Colorado Fuel & Iron Corp. 176
Wilfley, A. R., & Sons, Inc. 181
Williams Patent Crusher &
Pulverizer Co. ..Inside Front Cover

Yale & Towne Mfg. Co.
Trojan Div. 215

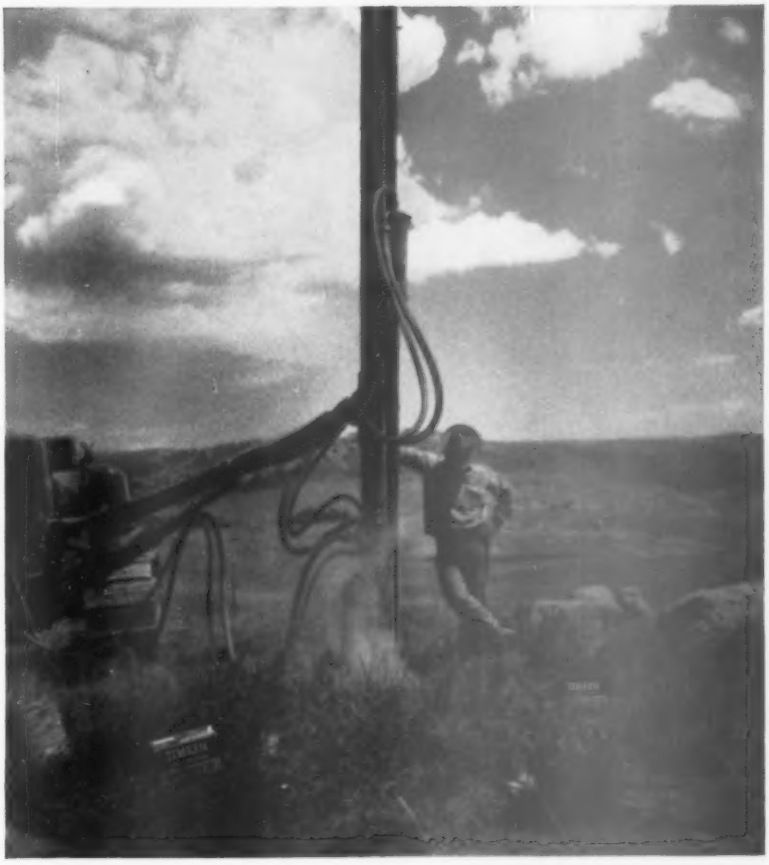
"WE DRILL 15% MORE...AND DRILL IT FASTER... WITH TIMKEN CARBIDE INSERT BITS"

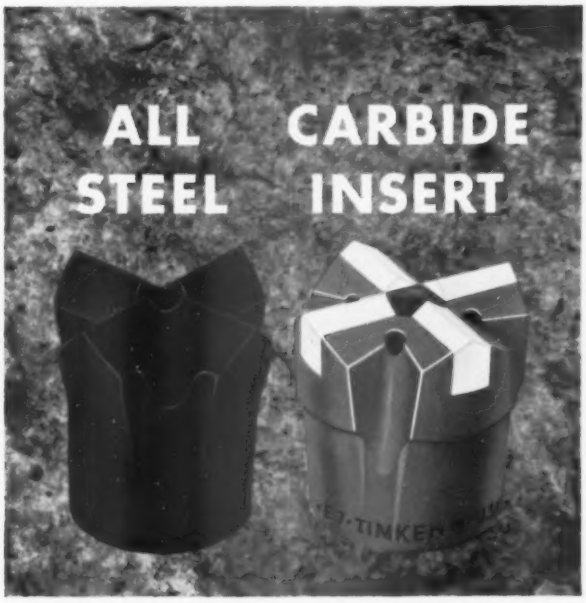
Special report from H-E Lowdermilk, Inc.

LOCATION: U.S. HWY. 287, LARAMIE, WYOMING

Operating conditions: granite and schist

H-E Lowdermilk, Inc. of Virginia Dale, Colo., had to drill through hard abrasive ground—mostly granite and schist—in constructing U.S. Highway 287 between Ft. Collins and Laramie. So they chose Timken carbide insert bits and drilled 15% more feet-per-bit! And they drilled faster, too, because the Timken bits stayed sharper longer than other bits they had used.





Which Timken Bit should you use?

The Timken carbide insert bit is your most economical bit in hard, abrasive ground. But in softer ground, use the low-cost Timken all steel multi-use bit. And because both bits are interchangeable in the same thread series, you can switch bits when the ground changes. Dozens of different Timken bits fit the same drill steel. Both are made from Timken electric-furnace fine alloy steel, have special shoulder unions that protect threads against drilling impact. For help in selecting the right Timken bit for your job, phone or write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

TIMKEN® REMOVABLE ROCK BITS

Enter 1116 on Reader Card

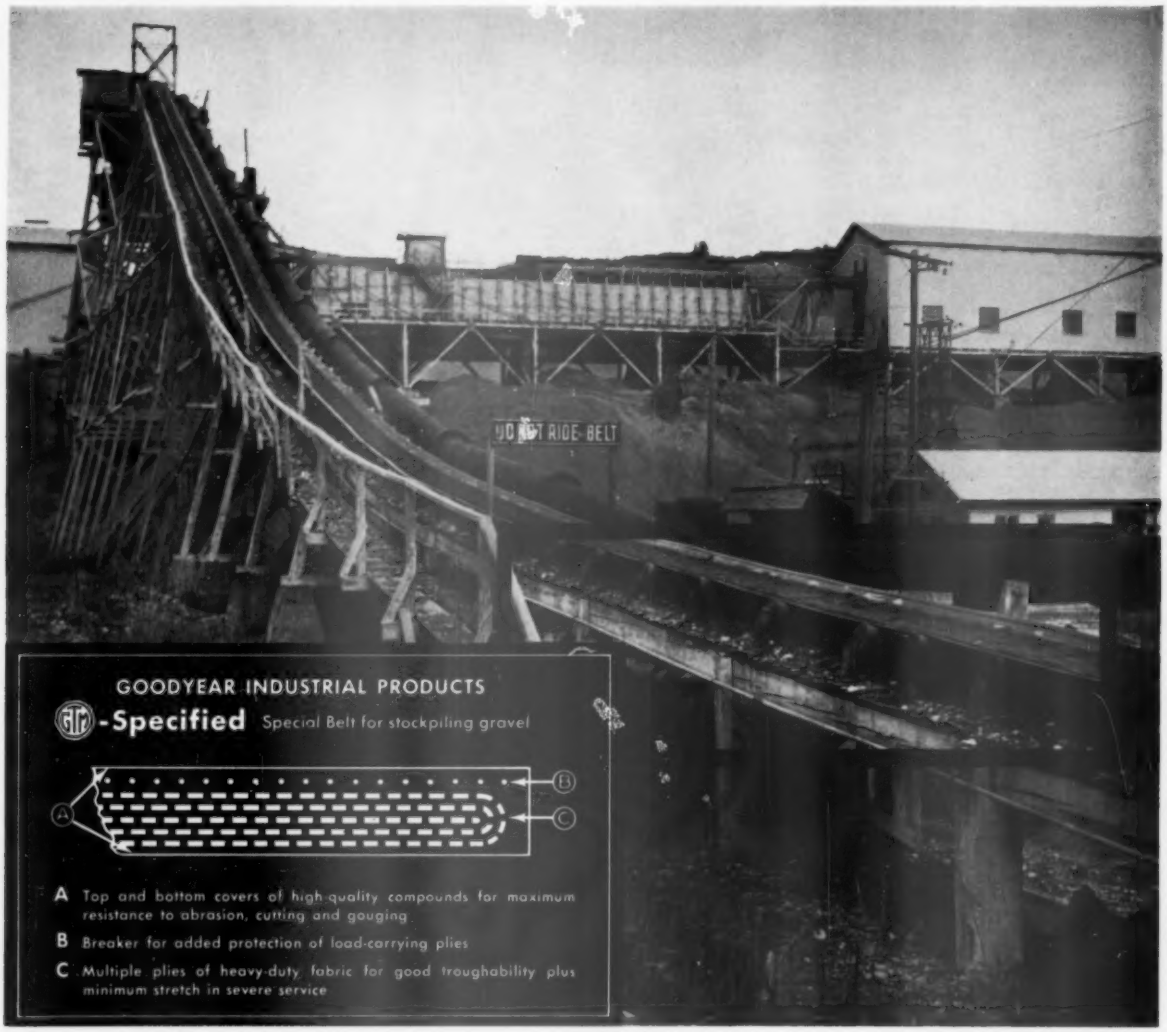
12 million tons in 9 years and still on the job

Belting out a soggy stream of gravel—at a hustling 450 t.p.h.—is a rugged assignment. So the owners of this busy Northwest gravel pit expected maintenance problems from any conveyor belt they'd choose for gravel stockpile duty.

But they were in for a real surprise from the special belt recommended by the G.T.M.—Goodyear Technical Man. At last report, it had handled 12 million tons during 9 tough years of use—needed little maintenance and no shortening—was still doing a standout job. That kind of performance so impressed this operator, it sold him several other Goodyear conveyors.

Looking for a belt to solve your conveying problem as satisfactorily as this one? Check with the G.T.M. through your Goodyear Distributor—or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*


GOODYEAR INDUSTRIAL PRODUCTS
GTM-Specified Special Belt for stockpiling gravel
A
B
C
A Top and bottom covers of high-quality compounds for maximum resistance to abrasion, cutting and gouging
B Breaker for added protection of load-carrying plies
C Multiple plies of heavy-duty fabric for good troughability plus minimum stretch in severe service

CONVEYOR BELTS BY

GOODYEAR

THE GREATEST NAME IN RUBBER

Enter 1079 on Reader Card